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ORIGINAL ARTICLES.

BACILLUS ICTEROIDES AND BACILLUS X.

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In order that there may be no misapprehension upon the part of bacteriologists who are now engaged in researches relating to the etiology of yellow fever, I give below a brief extract from a paper which I shall send to the *Centralblatt für Bakteriologie* for publication.

EXTRACT.

As stated in my previous paper, my information relating to Sanarelli's bacillus, when this paper was written, was obtained from a translation in the *British Medical Journal*, of his "Address" given before the University of Montevideo, June 10, 1897. I have since read his paper in the *Annales* of the Pasteur Institut, and upon my return from Europe in September I passed through Paris, and through the courtesy of Dr. Roux obtained a culture of the "bacillus icteroides" which had recently been sent to the Pasteur Institut by Dr. Sanarelli. I now recognize the fact that there are certain cultural differences, some of which have been pointed out by Sanarelli in his paper in that journal. At present bacillus X is non-motile, while Sanarelli's bacillus is actively motile. But in my original cultures, as stated in my published report, bacillus X was motile. The presence of flagella may now be demonstrated by proper staining methods.

In judging of cultural differences now existing, it must be remembered that bacillus X has been cultivated in artificial media for eight years. In the comparative study now being made in the pathologic laboratory of the Army Medical Museum in this city, the peculiar seal-like colonies, to which Sanarelli attaches so much importance, have not been observed in cultures of bacillus X. Again, bacillus X causes gas production in lactose bouillon, while Sanarelli's bacillus does not.

In view of these facts complete identity in biologic characters can not be maintained.

The next question which arises is, whether the bacillus obtained by Sanarelli from yellow fever cadavers in Rio de Janeiro, and by me from yellow fever cadavers in Havana, are varieties of the same species. Comparative experiments are now being made under my direction with a view to determining this question.

In my opinion bacteriologists are often too much inclined to differentiate species upon slight cultural differences, such as the appearance of colonies, ferment action, etc. Sanarelli himself has shown us, in his paper published in the *Annales* of the Pasteur Institut, three varieties of the colon bacillus, which may be distinguished by differences in the colonies formed upon gelatin plates. Every experienced bacteriologist knows that varieties of all the best known species of bacteria exist and that these may differ as to their pathogenic power, the rapidity and character of their growth in various culture media, their power to produce pigment, the production of acid, of gas, etc.

If bacillus X and Sanarelli's bacillus icteroides are not even varieties of the same species, the question will remain whether one, or the other, or neither, is concerned in the etiology of yellow fever.

It is evident that neither has a claim worthy of serious consideration upon any other ground than that which relates to its pathogenic action. Sanarelli's claim is based chiefly upon his inoculation experiments upon the lower animals and upon man, and his results deserve the most careful consideration. Comparative experiments upon dogs, rabbits and guinea pigs are now being made, under my direction, with Sanarelli's bacillus and with my bacillus X. It is my intention to publish full details of these experiments hereafter. At present I must content myself with an account of some preliminary experiments which show that bacillus X has remarkable pathogenic properties when tested upon dogs by Sanarelli's method (injection into a vein). These experiments have been performed in the pathologic laboratory of the Army Medical Museum by Maj. Walter Reed, surgeon U. S. A., in charge, assisted by Dr. James Carroll, hospital steward U. S. A., and the record given below has been made for me by Dr. Reed.

Experiment 13. July 23, 1897, 1:20 P. M. Young dog, No. 327, weight thirteen pounds, inoculated into ear vein with 5 c.c. of a twenty-four hour culture in glucose bouillon of X from blood of rabbit 314. A very active lively animal. At 1:35 P. M. appears very sick, lying down, does not respond to voice. At 2:05 P. M. vomits considerable quantity of partially digested food, followed by fluid stool with tenesmus. At 2:23 P. M. a small brown watery stool. This repeated at short intervals with much tenesmus. At 2:51 P. M. and 3:05 P. M. vomits with much effort a small quantity of grayish frothy fluid mixed with mucus; 3:30 P. M. vomits; 4 P. M. dog lies on its side with extremities rigidly extended. Temperature in rectum 104.1 F.; prior to injection, temperature 101 F. July 24, 9 A. M., temperature 102; refuses food or drink; lies on side with extremities extended; during the day has several thin dark fluid stools containing blood and mucus; 4 P. M. temperature 104; died at 6 P. M., twenty-eight and one-half hours after inoculation.

Autopsy.—Thorax: Thymus gland large, dark red; shows a number of small hemorrhages beneath surface. Mediastinal glands swollen, dark red in color. A small hemorrhage over right auricle, which is distended with blood. Left auricle empty. Right ventricle distended, left contracted. Hemorrhages beneath endocardium in latter. Valves normal. Myocardium, pale red. Numerous hemorrhagic areas beneath pleura over right lung. Both lungs, all lobes congested. Lower lobe right lung edematous. On cut section, reddish fluid exuded freely.

Abdomen: Numerous hemorrhages beneath peritoneal surface of duodenum.

Liver: Of a mottled pale and red color, the light color predominating.

Spleen: Enlarged, dark red, firm.

Kidneys: Enlarged, cortex swollen, pale.

Adrenals: Small, pale.

Stomach: Mucous membrane over greater curvature, of uniform dark red color. No erosions to be seen.

Intestines: Duodenum and upper part of jejunum contains considerable quantity of a fluid black tarry material. Mucous membrane of small intestine pale throughout. Peyer's patches not swollen.

From ileo-cecal valve to anus the longitudinal rugæ of mucous membrane are the seat of marked hemorrhage, which extends into submucosa. Some fluid blood in large intestine.

Bladder: Contracted, containing about 4 c.c. of albuminous urine. Cultures from blood, liver and spleen show numerous colonies of X. Kidney, urine and bile negative.

Microscopic examination of sections shows wide spread necrosis, with fatty degeneration of liver parenchyma and cloudy swelling of renal epithelium.

Experiment 35.—August 6, 1897. Dog No. 347. Weight ten pounds. Injected at 2:45 P. M., with 13 c.c. of a seventy-two hour culture in 2 per cent. lactose bouillon of X from rabbit No. 338. Animal much prostrated by injection; 3:05 P. M. vomits food with much retching; again vomits at 3:15 P. M., followed by watery stool containing mucus. Temperature 4 P. M. 96.4 F.; prior to injection, rectal temperature 101 F. Found dead at 8 o'clock following morning, less than eighteen hours.

Autopsy.—Thorax: Subendocardial hemorrhages in left ventricle. Sub-pleural hemorrhages, upper lobe, right lung. Hemorrhagic infarct lower lobe, same lung.

Abdomen: Liver pale, grayish color.

Spleen: Slightly swollen, dark red, soft.

Kidneys: Deeply congested.

Stomach: Contains about 200 c.c. of fluid blood. Mucous membrane throughout of a dark red color. Both small and large intestines contain much fluid blood. Mucous membrane of small intestine swollen and of a uniform dark raspberry red. Less injection of large intestine, though this is quite marked. Bladder contracted, empty.

Cultures positive from blood, liver, spleen and urine. Negative from bile and kidney.

Microscopic examination of sections of liver show cloudy swelling of cells with congestion of capillaries.

These experiments show that bacillus X injected into the circulation of dogs, produces symptoms and pathologic lesions similar to those produced by equal quantities of a culture of Sanarelli's bacillus. The persistent vomiting, intestinal hemorrhage, albuminous urine (dog 327) and profound changes in the liver cells are certainly very remarkable and give additional weight to the supposition made in my report that "it is possible that this bacillus is concerned in the etiology of yellow fever" (p. 272).

AN IMPROVED METHOD OF DETECTING CASTS IN THE URINE.

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As is well known, two methods are in use for obtaining the sediment from urine for the purpose of microscopic examination. The oldest and most frequently used is by natural subsidence. A quantity of the urine is placed in a cylindric or conical vessel and allowed to stand at rest for twelve or twenty-four hours, or even longer, when the sediment thrown down is removed by a pipette and a drop or more of it examined under the microscope. The other method is by the use of the centrifuge; the urine being placed in suitable tubes and subjected to rapid revolution the sediment is quickly thrown to the outer ends of the tubes, from which it may readily be removed by a pipette and placed under the microscope for examination.

Each of these methods has its advantages and each its disadvantages. The method by subsidence has the advantage of permitting a large amount of urine to be operated on, but it requires much time and the deposit produced, especially in urine from cases of interstitial nephritis, is apt to be very light and occupy a considerable space, so that the microscopic examination of two or three drops of it reveals the character of but a small fraction of the entire sediment, easily permitting casts and other elements to escape detection when they are sparingly present.

In quickness of application and concentration of sediment to a small bulk, easy of exhaustive examination under the microscope, the use of the centrifuge is greatly to be preferred, and on these accounts it has of late years come more and more into general use. It has, however, one serious drawback, particularly in searching for casts when sparingly present, and that is the small amount of urine from which the sediment is obtained. In most centrifuges the tubes for holding the urine are of not more than 15 c.c. capacity, and since in using them they are never completely filled the sediment obtained, even when two of the tubes are used, represents only from 20 to 25 c.c. of the fluid under examination. It is perfectly obvious that in looking, for example, for casts in a case of suspected cirrhosis of the kidney, negative results from comparatively so small an amount of urine would not be of great value; 200 or 300 c.c. of the urine might reveal the presence of casts while 30 c.c. might show none.

During the past two years a combined subsidence and centrifuge method has been devised and put in use by us which leaves little or nothing to be desired for ease and certainty in detecting casts. While of much value in examining for casts in any specimen of urine, it is particularly useful in those many and perplexing doubtful cases in which casts, if present at all, are very sparingly found and which, by either of the usual methods, can be detected, if at all, only after repeated and tedious microscopic examination.

Our method is practiced as follows: About 250 c.c. or more of the urine, as freshly voided as possible, are poured into a glass percolator, such as are used by druggists in making tinctures and fluid extracts. The cylindric or Oldberg form is to be preferred, as the sediment collects more completely at the bottom than when using the conical form. The opening at the bottom of the percolator is closed with a perforated rubber or cork stopper through which passes a piece of glass tubing about 4 centimeters long, and this is connected with a short piece of pure rubber tubing provided with a pinch cock. The entire apparatus, before pouring the urine in, should be washed thoroughly clean and sterilized by the application for a sufficient length of time of a suitable germicidal agent, such as a dilute solution of formaldehyde, followed by washing with recently boiled water. After pouring in the urine a gram or two of chloral hydrate, dissolved in a few cubic centimeters of warm distilled water, are added to retard decomposition; the percolator is now covered with a glass plate and set aside in a cool place for eighteen or twenty-four hours. At the end of this time the sediment of the urine will be found in the bottom of the percolator; if the urine is from a case of suspected interstitial nephritis, for which this method is particularly adapted, the deposit will usually be a light flocculent cloud, and sometimes instead of being at the very bottom of the percolator it will be found floating a few centimeters above it. By opening the pinch cock on the rubber tubing the sediment is drawn off and collected in one or two centrifuging tubes; in all cases the first cubic centi-

meter or two may be rejected as it contains little or none of the sediment, and in case the deposit, as spoken of above, floats somewhat above the bottom of the percolator, enough of the urine should be slowly drawn off to bring the deposit down to the outlet before collecting in the centrifuge tubes. The latter, which now contain in 20 or 25 c.c. practically all the sediment from the original 250 c.c. or more of urine, are placed in the centrifuge and submitted for a few minutes to about 3,000 revolutions a minute. By this treatment the sediment is condensed to a small deposit at the apex of one or two tubes, from which it is removed by a pipette and examined under the microscope. With suitable care essentially the entire sediment from 250 c.c., or even 500 c c., of urine from the average patient with suspected cirrhosis of the kidney, may by this procedure be reduced to from one to four small drops within which, it is evident, are practically all the casts of the large volume of urine employed. The work of examining this small volume of sediment under the microscope is usually brief. If casts are present in sufficient number to be of clinical significance they are generally found quickly.

If, as just described, the percolator is sterile and sufficient chloral hydrate has been added to the urine, the latter generally undergoes during the 18 to 24 hours of its subsidence only a slight change, and this instead of being a detriment is undoubtedly of considerable advantage for the purpose in view. The change referred to is the coagulation in a very light, flocculent state of a part of the mucin of the urine which in settling out unquestionably collects and carries down with it any casts that may be present, acting very much as the white of an egg does in clarifying or "settling" turbid coffee.

Instead of a percolator, as directed above, a tall glass cylinder or bottle may be used, the sediment being drawn off at the end of 18 to 24 hours by means of a pipette and transferred to centrifuging tubes. A percolator, however, or some other similar device is considerably to be preferred, the deposit from the urine being much more perfectly collected and easily drawn off in its entirety than by the other method.

If we wish to stain the casts or other sediment the appropriate dye may be added to the liquid in the centrifuge tubes before centrifuging, and in a like manner chemical reagents, such as acetic acid to clear up phosphates, may sometimes be used to advantage.

To the conscientious physician who has not infrequently devoted many long sittings to examining under the microscope, often with negative or questionable results, the sediment (whether obtained by gravity or centrifuging) from repeated samples of urine from a patient suspected of having incipient cirrhosis of the kidney, the method just described will be, if our experience is any criterion, a most welcome change. It is true that eighteen to twenty-four hours must elapse after receiving the urine before results may be obtained; but these hours involve no labor and when, at their close, the drop or two of ultimate sediment are placed under the microscope their examination in the great majority of cases may be made with at least comparative ease and rapidity, and with a confidence in the results, even if they are negative, that is in very gratifying contrast to the uncertainty often following the previous laborious methods.

The following test shows the superior ease and accuracy of this method of detecting casts. A sample of urine was secured that was known to contain a very few casts; it was divided into three parts, one of which was submitted to the centrifugal, another to the gravity, and the third to the present described combined process. Although the sediment obtained in the centrifuge was examined with exhaustive care no casts were found; an equally painstaking examination of the gravity deposit revealed a single cast; with the combined process, however, four or five casts were easily found in the first slide placed under the microscope and with an expenditure of time not one quarter as great as that given to either of the other two examinations.

We give only one of the several cases that have recently come under our observation illustrating the clinical value of this method of searching for casts.

Mr. X., 58 years of age, robust physique, a gentleman of means, and assiduously engaged in many commercial enterprises; a good liver, but temperate in the use of tobacco and alcohol; has never had any very serious sickness; family history good, although one and possibly two brothers are believed to have died with Bright's disease. He has had many persistent neuralgic attacks in different parts of his body and has suffered from frequent backache. There is slight enlargement of the left ventricle with moderate increase in arterial tension. The urine is of light color, averages 1,500 c. c., specific gravity about 1,017, slight increase of total acidity; upon standing, only a little light sediment is as a rule thrown down. For two or three years both he and his family physician have feared some organic kidney trouble and as a consequence he has consulted a number of doctors making more or less of a specialty of these disorders. They have all examined his urine and he has preserved their written reports. All have found minute traces of albumin at times, but only one has been able to find casts, and he after long and repeated search had discovered only two. The various physicians differed in their diagnoses, most of them, however, believing that, in the entire absence of casts, organic kidney trouble did not exist, or at least could not be demonstrated. During the past few months the gentleman has been repeatedly under our observation. His urine has been examined microscopically by us several times, using both the gravity and centrifugal methods of getting the sediment, with negative results except on one occasion when by the use of the centrifuge a single hyaline cast was discovered. Upon applying the present combined method, however, we have never failed to find, even with only a moderate amount of search, from two to five casts and sometimes even more. This in conjunction with the other features presented by the case makes the diagnosis certain.

It is evident that this method, while designed especially for detecting casts, may be used with great advantage in examining for any other sediment in the urine, and we have not infrequently employed it in searching for spermatozoa, epithelial cells, micro-organisms, etc., especially when these elements were sparingly present.

In conclusion we should say that, singular as it may seem, the chief defect for clinical purposes in the present method is possibly its too great delicacy. By its use we have found that if sufficient time and care be given to the microscopic examination casts may be found in the majority of samples of urine even

from persons in perfect health. Our observations on this important subject are not yet quite complete, but before long we shall publish our results.

A NEW AND SIMPLE METHOD OF OBTAINING THE URINE SEPARATELY FROM THE TWO KIDNEYS IN EITHER SEX.

Read before the Chicago Medical Society, Jan. 12, 1897.

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Owing to the vital importance of the renal function the desirability of being able to determine the presence or absence of a kidney, as well as its functional capacity, has long been recognized by every surgeon who has been called upon to remove one of these organs for some incurable disease. It is a well-known fact that, owing to an error or arrest of development, an individual may be possessed of but a single kidney, or one of the kidneys may be so atrophied or misformed as to possess but little, if any, functional activity. It has more than once been found at the autopsy that the kidney removed by the surgeon was the only one possessed by the patient.

While absence of a kidney is quite rare, being found in only one out of about thirty-three hundred cases (Morris) or 0.03 per cent., still where but a single kidney exists, it is much more liable to become diseased.

In De Jong's (quoted by Wagner, *Deutsch. Zeit. f. Chir.*, 24, 581) collection of 197 cases of nephrectomy with 81 deaths, in 2, or nearly 2.5 per cent. of the 81 deaths, the other kidney was found to be absent, while in 9 it was so atrophied or diseased as to be practically functionless. Thus in 11, or 13.5 per cent., death could have been avoided, or at least not directly charged to the surgical operation, could the condition of the opposite kidney have been determined beforehand. Much thought and ingenuity has been expended in devising ways and means for determining the presence or absence of a kidney. It is quite universally acknowledged that physical examination by palpation, percussion, etc., is absolutely unreliable under ordinary circumstances in determining the presence of a normal kidney, normally located. Hence, attention was early directed in the line of securing the urine separately from the two kidneys. Could this be done with certainty it would not only establish absolutely the presence of two kidneys (except in a few rare anomalies of development), but would be of very great service from a diagnostic point. Even when it is quite certain that the kidney is diseased it is often impossible to determine from the symptoms and a physical examination which kidney is at fault. To be able to collect the urine separately from the kidneys is thus of inestimable diagnostic value.

It is unnecessary to describe in detail the various methods and appliances that have been devised to accomplish this object, still in presenting anything which is claimed as new and original it is well to mention what has preceded in the same line.

We may mention first Simon's suggestion of compressing the ureter at the brim of the pelvis with the hand introduced into the rectum. On account of the great difficulty and danger of introducing the whole hand into the rectum, it was substituted by Davy's rectal lever as in compressing the common iliac artery to control hemorrage. Following this appeared numerous forceps or compressors for shutting off or closing one ureter temporarily while urine escaped from the opposite one. To this class belongs Tuchman's forceps, shaped like a lithotrite. With it one was supposed to be able to feel the ureteral orifice in the bladder and compress it in the jaws of the forceps.

Ebermann's forceps for compressing the ureter with one blade in the bladder and the other in the rectum. Polk's S-shaped catheter for compressing the ureter against the finger in the rectum. Müller's curved spring pad introduced into the rectum. Silbermann's rubber bag introduced into the bladder and filled with mercury so as to compress the ureter on one side.

Some of these compression instruments were visionary, while all of them were so unreliable as to be of no practical value. Next we may mention Hegar's and Sänger's method of cutting down upon the ureter in the anterior vaginal fornix and temporarily compressing it with a ligature, and Warkalla's "umsteckungs" method.

Attention was now directed to the ureteral openings and Pawlick with a delicacy of touch and manipulation that has not been equaled by anyone else, has repeatedly been able to catheterize the ureters of the female through the urethra by touch alone.

Fenwick devised a curved catheter with a large lateral opening, which he hoped to be able to place over the opening of the ureter, and thus by means of a rubber bulb suck the urine directly from the ureter. Considerable light was now thrown upon the subject by the appearance in the field of a number of cystoscopes after the Nitze-Leiter plan by the aid of which the ureters have been successfully catheterized. They are so complicated, however, and require so much practice and dexterity to use them successfully as to be practically beyond the ordinary practitioner.

Simon devised a female urethral speculum through which by means of a reflector or electric headlight the interior of the bladder could be seen as it became distended with air and the ureters thus catheterized by sight. Kelly improved and popularized this method, and following his directions many operators have been able to catheterize the female ureters.

It is however no simple thing, but requires considerable practice, great patience and dexterity, and I have seen those experienced in the method obliged to give up after many minutes of fruitless endeavor. It is likewise at times so painful to the patient as to require an anesthetic, and repeated unsuccessful attempts to enter the ureter may cause a hemorrhage which may seriously interfere with the object in view.

Numerous operators have resorted to suprapubic and perineal cystotomy in the male and vesico-vaginal fistula in the female in order to catheterize the ureters.

Two quite recent methods which do not have in view the catheterization of the ureters deserve mention. Rose (*Centralbl. f. Gyn.*, 1897, Nos. 5 and 21) uses an urethral speculum similar to Simon's and Kelly's, the inner end of which is cut obliquely or on the bias.

The idea is to cover the ureteral opening in the bladder with the end of the speculum so the urine will flow directly into the speculum, from which it can be secured. He admits that this is at times very difficult to do and other methods may have to be tried.

Neumann (*Deutsch. Med. Woch.*, 1897, No. 43) describes a large-sized catheter-like instrument with a septum extending longitudinally throughout its entire length. The septum extends beyond the inner

end of the tubes, which open respectively one on either side. When introduced, it is intended the septum should lie snugly against the posterior wall of the bladder, aided by the finger in the vagina, so as to form a water-tight partition and thus guide the urine from each side into the respective side of the catheter. Rose (*Deutsch. Med. Woch.*, 1897, No. 48) criticised Neumann's instrument and showed the unreliability of his method.

Nearly all the preceding devices have been applicable only to the female, the male being practically out of the question.

The great difficulties and unreliability of the methods proposed have led such practical surgeons as Czerny and Israel to establish renal and ureteral fistulæ in the lumbar region in order to decide which organ is the seat of disease, and such men as Thornton, Morris, Fenger and others to perform preliminary ventral celiotomy and bilateral lumbar incisions, in order to permit palpation of the kidneys.

The above does not contain all the slight modifications which have been proposed, but illustrates all of the principles thus far brought out. With this brief introduction then, we may proceed to a description of our own device and the method of its application.

The instrument although quite simple is, as usual, somewhat difficult to clearly describe. It consists of a double catheter, each being separate throughout, but both being enclosed in a common sheath throughout its shaft or straight portion, thus giving it the appearance of a single tube flattened from before backward. Each catheter, however, is separately movable about its longitudinal axis within the sheath. The sheath, or longitudinal straight portion of the catheters, is 20 cm. in length, graduated in centimeters along its upper surface. A detachable handle is attached to the longitudinal portion. The proximal extremity (in reference to the patient) is curved somewhat similar to an ordinary male sound—forming an arc of about 60 degrees of a circle, with a radius of 35 mm.

This curved portion does not pass at once into the straight portion, but is set on a slight forward angular displacement about 3 or 4 mm. in length. Upon transverse section this curved portion is approximately a semicircle, so that when the flattened surface of the two catheters are opposed it is nearly round. Near the end on the flattened surfaces and the lateral portions of the semicircular surfaces are three or four small perforations. The distal extremity of each catheter is round and curved in the same plane as the proximal extremity, forming about the quadrant of a circle, the same as the curved end of an ordinary male sound. (Fig. 1.)

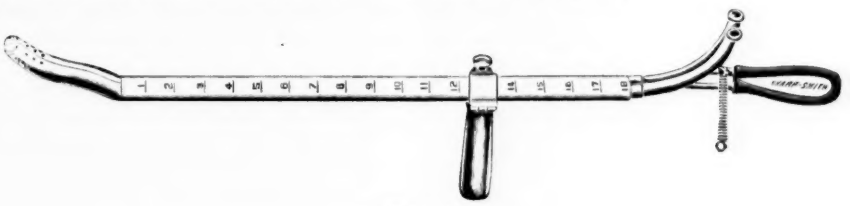

FIGURE 1.

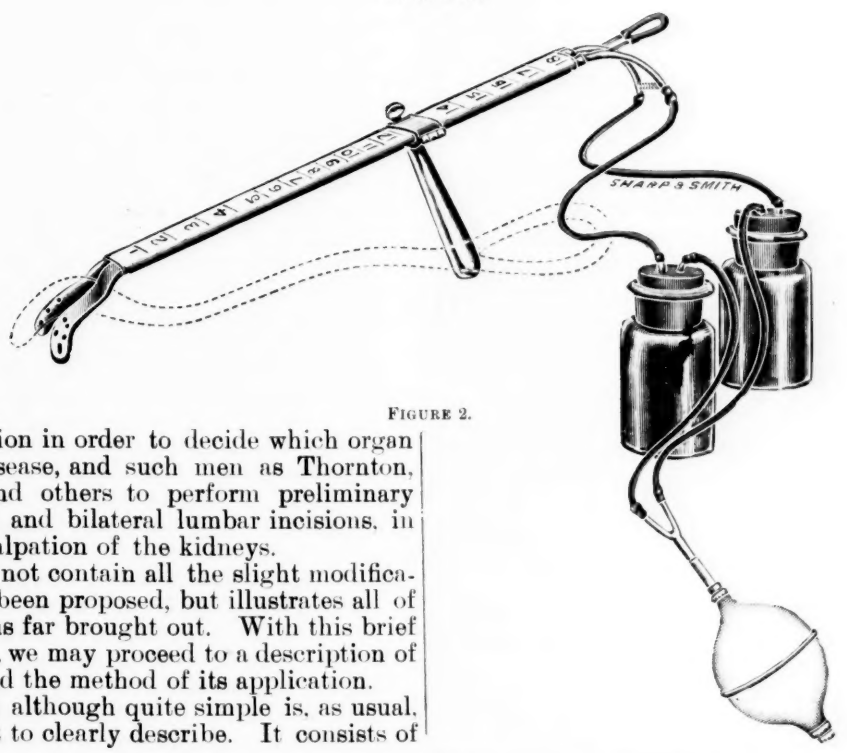

FIGURE 2.

FIGURE 3.

The curves of the two extremities being in the same plane, the distal end will always indicate accurately the exact direction of the proximal end. At about the junction of the distal curved with the straight portion is a short tube, continued in the line of the straight portion and opening into it. The distal extremity of each catheter is connected by means of a short piece of rubber tubing with a separate glass vial. The corks of the vials are doubly perforated. Each vial is finally connected by means of a piece of rubber tubing with a single rubber exhaust bulb. (Fig. 2.) As part of the device there is a metal

lever about 25 cm. in length, with a handle at one end, the opposite extremity being suitably curved and flattened laterally. (Fig. 3.)

The instrument is used in the following manner: The patient, male or female, is placed comfortably on a table in the ordinary lithotomy position, with the hips slightly elevated. The instrument, with the flattened surfaces in contact so as to form practically a single catheter, is introduced into the bladder in the ordinary way. So soon as the proximal curved extremity is within the bladder, the proper distance being indicated by the graduated scale, each catheter is rotated about its longitudinal axis until each proximal end, as indicated by the distal end, is directed outward and backward. The end of each catheter should pass through an arch of about 110 to 120 degrees, or so that the angle subtended posteriorly by the two catheters will be about 120 or 140 degrees. They are held in this position by a small spiral spring. The ends of the proximal extremity will now be in the neighborhood of, but not exactly at, the ureteral openings. The ends are separated a greater distance than the distance between the ureteral openings so as to avoid the danger of compressing the opening of the ureter, and thus preventing the escape of the urine. The lever is now introduced into the vagina in the female or rectum in the male. By gentle pressure forward directly in the midline, the base of the bladder is raised into a longitudinal fold between the ureteral openings.

The curve of the lever is such that it fits nicely in the angle formed by the separating extremities of the catheters, thus forming a complete watershed. The end of each catheter now lies at the most dependent part of a little pocket, a perfect watershed separating the two. The ureters open, one on either side of the watershed near the base of the declivity in the immediate vicinity of the respective end of the catheter.

By producing a gentle exhaustion of the air in the vials by means of the bulb, the urine, as fast as it escapes from the ureters, drops directly into the ends of the catheters and flows at once into the vials, right and left respectively.

The instrument and its application are so simple that its advantages are apparent at once, and hence need no arguments to support them.

This being the case, we may proceed at once to dispose of any possible objections that may suggest themselves.

The first question which naturally suggests itself is, is the watershed perfect and complete so that there can be no intermixture of the urine escaping from the opposite ureters? My first experiment was made on the cadaver. A supra-pubic cystotomy was made on a male cadaver, so as to thoroughly expose the interior of the bladder to view. The end of the rubber tube of an ordinary irrigator was inserted into the upper end of one of the ureters. The watershed was now made by the lever introduced into the rectum and the water from the irrigator allowed to slowly flow into the bladder. It would flow at once to the inner end of the catheter on that side without leakage to the opposite side.

Through the kindness of Dr. C. E. Manierre, I had an opportunity of using the instrument on one of his patients, which afforded an absolute demonstration of the completeness of the watershed. It was a female, from whom he had removed the right kidney about a year previous; hence, no urine could possibly enter the bladder except through the left ureter. Although the instrument was used several minutes and considerable urine collected in the left vial, the right vial remained perfectly dry, not a drop of urine appearing in it. We must conclude from this that the septum or watershed is perfect.

The possibility of compressing the opening of the ureter and thus preventing the escape of the urine from that side is obviated, as already mentioned.

In diseased conditions of the vesical mucosa the value of an examination may, upon first thought, appear to be considerably lessened, owing to contamination of the urine with products of vesical origin. Upon reflection, however, this will be found not so. The bladder, when necessary, should be thoroughly cleansed by irrigation before introducing the instrument. After the instrument is in place the little pockets may be again cleansed by irrigating them directly through the little straight tubes on the distal end of the instrument provided for that purpose.

The urine as fast as it escapes from the ureters is sucked at once into the catheters, so that it does not remain in contact with the mucosa. The end of the catheter is so near the opening of the ureter that the urine comes in contact with an extremely small portion of the bladder surface. The examination is not continued long enough at any one time for pus (for instance) to be formed in sufficient quantity to be taken up by the catheter. Hence it will be seen that contamination, even when the bladder is diseased will be slight.

It is likely that in certain greatly enlarged prostates or growths of the so-called middle lobe or in vesical calculi or chronically inflamed and contracted bladders, the instrument would not be applicable, but such cases form a very small minority of those in which its use would be desirable.

A few words in regard to the use of the instrument. The little straight tubes, when not being used for irrigation, must of course be closed air tight by simply tying the little rubber tubes attached to them, or passing the opposite ends of a single tube over each straight end. Aspiration with the bulb should not be too great so as to draw the mucosa into openings of the catheter. Very slight aspiration is all that is necessary. As a few drops of fluid are apt to remain in the bladder even after the use of a catheter, the first few drops that come over should be discarded.

The instrument should be opened carefully when in the bladder, so as not to excite hemorrhage by injuring the mucosa. The proximal curve should be just within the bladder, which is determined by noting the length of the urethra on the scale. Introduce the instrument into the bladder and open it before introducing the lever into the vagina or rectum. The ends of the catheters are easily felt through the vagina or rectum, and the lever should be directly in the midline, midway between the two ends and pressed snugly into the angle. Sufficient pressure should not be used to cause pain, as the watershed is very easily formed. The urine does not drop continually into the vials but intermittingly, just as it escapes from the ureters. The use of the instrument is not painful and does not require an anesthetic, except possibly in an oversensitive or nervous patient, who would not submit to any manipulation whatsoever.

By attention to these simple rules the application of the instrument will be found very simple, and the results all that could be desired.

FEEDING OF SURGICAL PATIENTS.

Presented to the Section on Physiology and Dietetics at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1–4, 1897.

BY ALBERT H. TUTTLE, S.B., M.D.
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Certain special considerations in regard to the feeding of surgical patients have induced me to take up this subject for discussion, that is, the need of definite instruction which will enable the nurse to practically comprehend the requirements of her patient and the simplification of the food materials employed. The subject is naturally divided into three periods, viz.: Before operation; after operation up to the time that the bowels are established, or the immediate effects of the anesthetic are eliminated; and finally the period of convalescence.

The first period is of variable length from a few hours to days or even weeks, depending upon the condition of the patient, the severity of the disease and operation and the necessary amount of preliminary preparation required. During the first period it is the aim of the surgeon to build up the strength and resistance power of his patient and, just before the operation, to prepare the bowels by emptying them as completely as possible. Unless we have been careful about the preliminary treatment it will be difficult to completely clear the bowels without exhausting the strength of the patient, owing to the fact that the bowels are affected by the nervous condition of the patient, which is generally present and perhaps has existed for a long period. In my experience most female surgical patients suffer from enervation of gastro-intestinal tract, with constipation, mal-assimilation and imperfect nutrition as a result of this weakness of the nervous system. Before a severe operation this should be overcome by toning up the patient as much as possible by overfeeding and tonics. The more severe the operation the more important it is that the bowels should be satisfactorily cleared of all the fecal matter and, at the same time, every effort should be made to support the patient and guard against subsequent shock. In order that we shall accomplish this we must feed the patient for some time before the operation on an efficient diet, yet one which will leave as little residue as possible for removal by catharsis. I believe that during this period we should use liquid foods which consist of a combination of nitrogenous and vegetable substances. Milk alone and combined with eggs, sugar and liquor, form one of the best nitrogenous preparations we have at our disposal, and another is beef juice prepared as follows: Thick, juicy meat from the bottom of the round is cut into slices an inch or more thick. This is heated in a slightly buttered, hot spider, so as to rapidly sear both surfaces and warm the meat completely. (This starts the juices and is very essential to success.) The slices are now cut up into cubes or strips and squeezed in a meat press which has been previously warmed in hot water, until all the juice is extracted. The juice should be collected in a warm vessel, salted and seasoned to taste and administered while it is still warm.[1] I have found that many patients prefer to take the juice in port wine that has previously been diluted with water. The number of patients who dislike either of these preparations are very few, which is more than I can say of any of the nitrogenous prepared foods on the market. They also offer the advantages of fresh preparation and lower costs. The meat juice to a certain extent acts as an iron tonic owing to the amount of hemoglobin which it contains. For the vegetables constituents of the diet I have depended upon barley, oats, flour, rice and corn meal prepared in the form of gruels and strained before ingestion. The fluid foods should be given at regular intervals of two hours from 6 A.M. to 8 P.M. and in a variable quantity, according to the demands of the patient. Coffee, tea or chocolate are given in small quantities only or completely withheld. Liquid malt is a valuable adjunct, aiding digestion and assimilation and in a measure serving as a pleasant bitter tonic. In certain cases an occasional dose of malt and cascara are of value in assisting the action of the bowels. The triple bromids in doses of 6 grains, t. i. d., act as a sedative to the nervous system as well as a bland aperient and indirectly help in the feeding of the patient. It sometimes happens that a patient can not bear liquid food well as it induces gaseous and acid fermentations with symptoms of abdominal distress. In these cases a carefully selected diet of solid or soft-solid food may be substituted during the preliminary treatment and until the day previous to the operation. On this day liquid food only should be given and on the day of operation all food should be withheld. Some surgeons are in the habit of giving their patients a bowl of clear soup early in the morning of the operation, but I prefer to substitute for this a cup of strong coffee. With careful attention to the above details the bowels can be easily moved or will act spontaneously at least once daily as a rule. If in obstinate cases they fail to do so, a mild aperient will produce a satisfactory evacuation. The result is that just preceding the operation the bowels can be efficiently cleared without upsetting the patient, by the administration of a small dose of castor oil during the evening before, and by washing out the lower bowels with soapsuds early on the morning of the operation. Formerly it was my practice to administer calomel and follow this up with salts, but I found it upset the patient, often caused many unnecessary discharges of a watery and depressing nature and, unless given in large doses, was uncertain. If the calomel is not entirely eliminated there is danger of some subsequent salivation and stomatitis. Patients do not complain of the bad taste of the oil if it is covered up with coffee or the oil is given in the form of an emulsion. After an operation all food should be withheld for a certain length of time. In the simplest class of cases patients feel better if they eat nothing until the following morning, and in abdominal cases it is absolutely necessary to maintain total abstinence for one or more days. In abdominal cases it should be the rule not to feed by the mouth until the normal peristaltic action of the bowels is fairly well established. This is marked by the passage of flatus per rectum and the flatness and softness of the abdominal wall. This rule should be imperative and, no matter how long it may take to establish the bowels, should be carefully followed. It is well to remember that by rectal feeding one often helps the bowels by starting peristalsis from below upward and in the normal direction. The first food after the administration of an anesthetic should be of a bland nature and of a limited amount. Three to four ounces of gruel or a few crackers with

[1] The Enterprise Manufacturing Company have placed upon the market a meat juice extractor which is modified from their meat chopper and which gives very satisfactory results.

black coffee are well borne. Malted milk and Mellin's food are sometimes preferred; their peculiar flavors seem to suit the taste of certain individuals. If the patient is suffering much from enervation of the gastro-intestinal tract before the operation, liquid food with occasionally a cracker or piece of dry toast will often be tolerated when more substantial food would cause distress. If the operation has been one of abdominal section, then the first feeding should be per rectum and peptonized milk and gruel in one-half pint quantities are given at the intervals of five to eight hours. This is first employed at the end of the second or third day, according to the case, and is continued from one to three or more days, until the bowels are free from gas and distension and the passage of flatus from time to time indicates the establishment of normal peristalsis. Simple cases rapidly advance toward the natural condition and in the course of twenty-four to forty-eight hours become fit for the feeding of the third period. The abdominal and cases with nervous depression are less rapid and suffer from distension and symptoms of distress with the slightest excess of food. The use of malted and peptonized foods in these cases should be persisted in for several days. After they become inefficient the patient feels a desire for more substantial food and the bowels are usually active with a daily dejection, or at least one every other day. At this stage a meal of soft solids can be given at midday, consisting of eggs, oysters, custards, rice, tapioca, bread pudding, blanc mange or the various oat, barley or wheat mushes. At the end of a couple of days, with this feeding, meat and potatoes can be added to the main meal of the day, and mush, eggs, toast and fish can be given for breakfast. By the end of a week from the time the patient has begun the taking of solid food, three regular meals can be given daily. It is better, however, to withhold meat from that of the evening.

The third period is characterized by house diet three times a day and such extra feeding as may be specially indicated by the condition of the patient. Three regular meals a day and two or three lunches are usually prescribed. Breakfast consists of mush, hot bread or gems (made from whole wheat, corn meal or flour), broiled chops, steak, fresh fish or eggs, with chocolate or coffee. Dinner comprises soup, a roast of meat (lamb, beef, chicken, game, turkey), fish, potatoes, green vegetables, bread and pudding (custard, bread, tapioca, rice, etc.). Supper is made of bread, toast, oysters, cold meat, hot gems, cold custard, blanc mange, assorted crackers, with tea or chocolate. All sweets, as candy and preserves, should be withheld and fruits allowed only in limited quantities. Cake and pastry and all articles cooked in fat are also prohibited. Lunches are served two and a half hours after each regular meal and consist of milk, eggs and crackers. By careful feeding in the above manner a large amount of food may be taken, digested and assimilated daily, and at no time will the stomach become over-distended.

If symptoms of distress from gaseous or acid fermentation occur, the regular feeding is suspended for a few hours and the condition corrected by the administration of bismuth and salol and sometimes in urgent cases, a small dose of morphin (one-sixteenth of a grain) is given, which controls the discomfort and nervous state of the patient better than anything I have hitherto tried. Every effort should be made to vary as much as possible the diet of each day. A careful study of the patient will often reveal some idiosyncrasy or special weakness in the digestion of particular food. Whenever a patient expresses herself as unable to eat certain things without a great deal of subsequent discomfort, I believe it is wise to respect this opinion and withhold the food complained of for the effect on the mental condition, if nothing more.

DISCUSSION.

The Secretary, Dr. EPHRAIM CUTTER of New York, remarked that the title of this paper included the feeding of surgical patients so as to do away with surgical operations. For example, some years ago a man was brought to him with chronic pleurisy and empyema. A fistula had discharged pus for four years. It had been proposed to resect the ribs as a last resort. This case entirely recovered in a few months by feeding only. Another case of the same kind came under the care of the speaker a few years ago but in a female and of less years standing. It was permanently cured in two months' time by feeding. The diet in both these cases was one pint of hot water before meals and on going to bed, and beef broiled after removing the white fribrous or glue tissue, which glue tissue ferments as sugar does in the alimentary canal. Two mouthfuls of broiled beef to one mouthful of vegetable food (*i. e.*, bread made from the Franklin Mills entire wheat flour) were thus proportionately eaten. A bad case of frog felon came into the hands of a surgeon who cut, but said the man would die as it was very severe. He was right, had the feeding been conventional. But the writer, called in consultation, advised large porterhouse steaks thrice a day as medicine. The man made a fine recovery. Perhaps some may say that these are not germain. Let me then give another case. Some twenty years ago a lady dieted for a round fibroid about three inches in diameter, sessile, on the fundus of the uterus. She tired of the slow process and T. Gaillard Thomas, M.D., LL.D., removed it by the knife. I saw the case during the convalescence. Dr. T. assured us that he never had a case do so well. While I think that the writer is right I should like it much better if people would feed so that no surgical operations would be necessary, but as man now is, this is too much to be hoped for.

WHAT THE MEXICANS EAT AND DRINK.

Presented to the Section on Physiology and Dietetics, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY F. SEMELEDER, M.D.

CORDOBA, STATE OF VERA CRUZ, MEXICO.

At the time of the conquest, Mexico was very poor in vegetable and animal food. The people consequently had to make up for the different things they lacked and eat certain indigenous animals and plants, some of which a European would hardly think of tasting, unless compelled to it by the most extreme hunger.

Wealthy people eat as do the same class in Europe, but their table will always show some national dishes, and in the most fashionable houses pulque will be found on the table.

In dedicating these lines to the especial Mexican dishes it will be understood that we refer to the Indians and the poorer class of people, their food is mostly vegetable. The basis of it is Indian corn in different forms, from the green and half ripe ear to the grits and flour.

Half of the food of the Mexicans consists of *tortillas*. The corn is soaked in hot water with a little lime. In that state it is called *nixtamal*. Then it is ground on a flat stone (*metate*) with a stone roller (*metlapil*) and reduced to a thick mass, out of which the flat, thin cakes, called in Spanish tortillas, and tlaxcales in Nahuatl, are formed with the hands and baked on a flat dish (*comal*) over the fire. To make tortillas is the business of the women and takes most of their time. In order to avoid this and enable the

women to do other work, mills have been set up to grind the corn, but in general the country people do not like the tortillas made by this process. It is certainly a great economic drawback that almost the whole time of the women of the poor should be required to make their tortillas, instead of employing themselves in some other profitable work. When the corn is boiled they make with lard, butter, red pepper, sweets or meat, a kind of rolls, enveloped in corn husks and boiled. These are the *tamales*. In the north and in certain parts of the coast the Indians mix corn flour with brown sugar. This mixture is called *pinole*. With a small bag of that an Indian will work and travel several days.

Another necessity of the Mexican is red and green pepper, which is used to season every dish. A Mexican meal is not complete without a dish of *frijoles*, beans. The Mexican can hardly do without chocolate and, if he can afford it, he will take it in the morning and in the afternoon or at night; it is always flavored with cinnamon.

The Mexican is not a great eater, nor can he be called an epicure. The hot taste of the red pepper seems to dull his palate and render him unable to appreciate the refinements of gastronomy. Salt is scarce and dear and little used; for the Indian a pinch of white salt is a great luxury. The indigenous vegetables are many and we can only enumerate a few: The sprouts of a *Smilacea*, eaten like asparagus; the buds and flower of the palm *Chamaedorea* tepejilote (called *metepehuiles*), the sprout of a large palm which is eaten like cabbage; the young and tender leaves of the *Opuntia* (nopal, prickly pear) called nopalitos, the leaves of a *Piperacea*, *tlalnepaquelitl;* the flower of the *Yucca gloriosa*; the gombo, *Hibiscus gombo;* the flowers of a *Papilionacea*, *Erythrina coralloides*, called *quimites* and *gasparitos;* the red and green pepper (Capsicum annuum); tomatoes, red and green (Lycopersicum and other solaneas); the pumpkin, when young and tender or when fully developed; the pumpkin flower; melon and watermelon (introduced from Europe); the flower of the *quaunzontle* (blitus bonus Henricus). In the northern states the prickly-pear (*tuna* in Spanish) forms a great item in the subsistence of poor people. To season dishes they use *epazotl* (chenopodium ambrosioides) and *papaloquelitl* (porophyllum coloratum, D. C.), the *Amaranthus hypochondriacus* (quintonil). The chenopodium viride (*quelitl*), the *romeritos*, the marshmallow, the purslane (portulaca), the *xoconoxtli* (literally red berry), the sour tasting fruit of a certain cactus. The *mohitli* (sericographis mohitli), *tè limon* (Andropogon citratus, D. C.) *tè de milpa* (bidens tetragonum) and orange leaves in infusion are common beverages taken in the morning with or without milk. Fish and amphibia: Of the latter the iguana (cyclura and iguana), lizards which are sometimes three feet long, in the warm lands; turtles and their eggs. In the lakes of the tableland the white fish (Atherina Humboldtii), the *juil* (Cyprinus Americanus), the *mextlapique*, a viviparous small fish; the *axolotl* (various classes of *Amblystoma*) which was only lately found to develop into a lizard; a kind of clam (*almeja*, a strange derivation from mytilus, Anodonta Mexicana); a small kind of fresh water shrimp, about one inch long, *acuacil* (Cambarus Moctezumae). In the rivers along the coast crawfish is found, but rarely; also eels and shad. A small kind of snipe (*chichicuilotes*) living in great numbers on the marshes of the valley of Mexico; ducks when they pass through on their passage north and south. *Ahuautle*, the roe of a kind of fly of the hemipterous family, coryza femorata; the locust, when it appears on the coast; the *xumil*, in the south, with a peculiar odor like bugs; the chrysalis of a night butterfly, living in the maguey plant; a kind of caterpillar, over an inch long, with black hair, living in nests on trees, etc. Of quadrupeds: In the warm lands, the armadillo and a kind of opossum.

What the Mexicans drink: Water, first of all, though even that in many places is rare, bad and unwholesome.

Pulque, the national drink, called the "Mexican wine." We shall have to devote a special chapter to the plant that yields pulque and to the process by which it is prepared. In this place we consider pulque only as a drink. It comes from the northern parts of the States of Pueblo and Mexico, along the Vera Cruz railway. The maguey plant grows on soil where nothing else can be produced and, as the pulque has a ready sale at a profitable price, the cultivation constitutes the special wealth of all this part of the country. Pulque is consumed in large quantities; the Vera Cruz railroad runs a train every night to carry it down from Apam, to be distributed in the City of Mexico in the early morning. The railway freight for pulque is on an average $1,000 a day. Pulque is a white liquid, with dregs of slimy flocks, of sour taste and smell, with a putrid flavor. Besides the alcoholic and acetic, likewise putrid fermentation is going on; the latter explaining why pulque can not be preserved, as it continues fermenting until the whole liquid is spoiled. It is drunk two or three days after being made while it is yet fermenting, and is adulterated, as is everything that is extensively used. Pulque is alcoholic and highly intoxicating; as it is very cheap it ought to be the delight of drunkards; for one cent you can get a big tumbler full and for two or three cents a man can drink himself beastly drunk. The common people in Mexico are great drunkards. It is said to have digestive and nutritive properties; but this can not be true, for nowhere in the world do you find more anemics and with poorer digestion. For festivals pulque is cured with different classes of fruit. Some years ago a speculative fellow tried to export preserved pulque. An advertisement has been sent to us, with the information that somewhere in Jersey City genuine preserved pulque can be had. The advertisement contributed to it every good quality and went far enough to say: "Pulque, notwithstanding the alcohol it contains, never produces the bad effects of alcoholism, even when taken in excess." That is humbug. Pulque can not be preserved. When fermentation is artificially interrupted, the liquid is no longer pulque. An inferior class of pulque is called *tlachique*. The sap of other kinds agave furnishes a fine brandy called *mexcal*, which has a smocky flavor, much like Scotch whisky. The brandy made at a certain hacienda in Jalisco takes the name of the place: Tequila.

Cheap brandy, aguardiente, burning water, is made in sugar factories and called chinguirite. A certain class of brandy supposed to come from Spain and to be made of grapes, is called catalan.

Colonche.—In the interior of the country where the Agave will not grow, an alcoholic drink is made from the juice of the red tuna (prickly-pear). By adding water and brown sugar, the juice is made fit for alcoholic fermentation. To make it stronger and more

durable, brandy is added. It is quite intoxicating.

Beer of good quality and high price of late is extensively made in the country.

Wine.—The cultivation of the grape was prohibited by the Spanish rule in order to monopolize the sale of wine for Spain. Now grape is cultivated in different parts of the Republic. In the central and lower lands it does not yield well, for the rainy season begins just when the grapes need dryness and heat. The same circumstance prevents the culture of hops. The places where wine is best grown are Dolores (State of Guanajuato), Parras and other places in the State of Coahuila. Genuine and good Mexican wine, like an inferior class of sherry, can be had in the City of Mexico for twenty-five cents a bottle. As it is not appreciated and finds no sale, all that wine goes to Texas. Certain extensive plantations in Coahuila, where good care is taken of the grape, produce a first-class quality, equal to the better classes of Spanish and Greek wines. By adding large quantities of sugar, the juice of oranges can be made to ferment into a kind of cider.

Chia.—The seed of a species of sage (salvia chian) a small black grain, when kept in water for some time covers itself with a grayish, slimy layer and looks then very much like frog-spawn; it is diluted with water, sweetened and flavored with the juice of certain classes of fruit and makes a nice refreshing drink.

Chicha is made by boiling barley; then the water and barley is exposed to the sun and air for a few days; when it begins to ferment it is sweetened and mixed with pineapple juice and is then a cooling beverage.

Tepache.—Dregs of pulque or toasted barley or crushed sugar-cane form the basis; mixed with water, pineapples, bananas, guayabas and sugar it is put to ferment; then nutmeg, clover or cinnamon is added, as well as molasses, and the liquor is ready. It is alcoholic.

Tibico.—When sugar-cane in the factories has gone through the cylinders the remains fall into a tub; the larger fibers are taken away to make brandy; the smaller ones like bran, remain a few days in the tub, fermentation begins and a kind of microscopic fungus develops. In this state it is called tibico; that is taken out and beaten with water, which causes an enormous and rapid growth of the fungi, so that the liquid increases under your eye. It is then diluted with water, sweetened with brown sugar, flavored and drunk. Hence tibico has become the synonym for exuberance.

A great comfort in hot countries is a refreshing drink. Plenty of natural ice is obtained from the volcanoes, and lately in several places artificial ice is to be had. In all the other places of the country, to get a cool drink of water, porous clay jars are used; by the constant oozing and evaporation of the water on the surface the contents of the jar are kept cool. In many places of the hot lands you see these jars hanging from the roof in the hall or in the corridor of the house and whoever feels like it helps himself to a drink.

Tuba.—On the Pacific Coast there grows a kind of coco-palm, not known on the Gulf Coast. The nut is of the size of a child's head, the flesh abundant and soft, so as to be eaten with a spoon. When the bud comes out, before the flower is developed the bud is cut off and a milky, very sweet sap distills out, which is drunk fresh or after fermentation. This is in Colima the drink of the poor people and is called tuba.

The lowest class of Mexicans have always been great drunkards. Pulque has a disastrious effect on the body and mind, but not quite so bad perhaps as common brandy. The Mexicans of the better classes were formerly exceedingly sober; twenty-five years ago there were not more than half a dozen cantinas in the City of Mexico; now there is one at nearly every corner. Drunkenness is now a common vice with young men of good families; they consider themselves more like men and equal to the Americans if they indulge in excessive drinking. Older people drink hardly anything but water; wine is very dear on account of the heavy duties; the wine of the country is not appreciated. And so we have again arrived at the water, which after all is the best, cheapest and healthiest drink. Ἄριστον μέν ὑδωρ, in spite of the German students who sing: *Cervisiam bibunt homines, Animalia cetera fontes.*

THE MAGUEY PLANT AND THE MAKING OF PULQUE.

The maguey plant, *metl* in the Aztec language, botanically Agave Americana (centennial plant in the United States, as it is supposed to bloom only once in a hundred years), called aloe in some parts of Europe, belongs to the liliacea family, tribe alströmeria. It is indigenous in Mexico; it grows everywhere in the hot and clod lands, on dry or marshy ground. But the finer varieties, tecometl or tlacametl, those that yield pulque or tlachique, only grow in the cold and high lands, principally in the northern parts of the States of Puebla and Mexico, called the plains of Anahuac. The plant, as is well known, is characterized by an extraordinary development; the stem is solid, covered by the leaves and measures sometimes 50 cm. in diameter. The leaves are stiff, of the form of a gutter, concave on the upper side and convex on the lower. The edges of the leaves are full of thorns; the fleshy part is full of thin parallel fibers, the surface being thick like leather and shiny. When the plant is completely developed, which takes at least ten years, it is of considerable size; the leaves are over 3 m. long, more than 30 cm. wide, 10 cm. thick at the bottom, the edges lined with wreathed thorns, the upper one of them 5 or 6 cm. long. The bud is at first enclosed in a straight cone. While the whole plant needs at least ten years to fully develop, the stalk, which grows over 5 m. high, reaches maturity in a few days. The upper end of the stalk, when it blooms, spreads out in candelabra, each of them crowned at its end by a corymb of greenish yellow flowers.

A maguey plant that has flowered dies within two or three years. If the bud is cut off, which is done with a special instrument made of oak wood, and a deep hole is scraped out in the stem, the sap that was intended to form the stalk and the flower collects in that hole. That sweet sap is what they call *aguamiel*, honeywater; it contains water, sugar and gluten. A plant that is tapped in that way will die within four or six months, during which time it will continue to give aguamiel; but then the stem will already be surrounded by little plants, that only need transplanting. That is the only nursing the maguey requires.

The aguamiel is collected twice a day by means of a calabash, used like a siphon; it is emptied in raw ox hides, spread out on a wooden frame so as to form a trough, in which some old pulque dregs are thrown. There the fermentation sets in; alcohol, acetic acid,

carbonic acid and putrid fermentation are formed and in two or three days the pulque is ready for use. It is sent to Mexico in barrels or in pipes made of hog skins.

There are more than thirty varieties of maguey, only twenty-two of which are fit for making pulque. These plants are cultivated, one might say civilized; the others grow wild and are valuable only for hedges and for fiber. Since the discovery of America the maguey plant has been introduced and acclimated in the south of Europe, and all along the coast of the Mediterranean Sea it grows without culture and like an indigenous plant, giving the landscape a characteristic aspect. The maguey is one of the most useful plants; an Indian might almost live on maguey alone.

Messrs. P. and J. Blasquez, to whom we are indebted for many details about the maguey, give the following enumeration: The underground part of the stem, ground with some maize, is made into cakes. Some varieties give a brandy; the stem fried and distilled gives the brandy called mezcal and tequila. Aguamiel, pulque and tlachique are drunk extensively and often to excess. Old pulque may be converted into excellent vinegar. The stalks are used as poles to build huts; the leaves furnish the roof; the thorns are used for needles and nails, the skin of the leaves for sandals, the fiber of the leaves, pita, for thread and is also made up into ropes, textures and paper; the coarser fibers furnish brooms and a kind of brushes; the roots are used for soap. When the bud is torn off there is found a coil of fiber which weighs half a pound and is as fine as silk. The dry leaves, stems and roots are used for fuel. The bud, half fried, becomes sweet and furnishes food for the poor. The tender flowers, mixed with eggs, make a kind of omelet.

A species of butterfly, Teria agaves, Papilio agaves, lays its eggs in the fleshy leaves of the maguey; in the next spring the caterpillar is formed. It is about two and one-half inches long and of the thickness of a finger. The Mexicans dig them out and eat them fried, with salt and red pepper. These worms are considered a great delicacy; they are said to taste like almonds or hazelnuts. We have never tried them. Besides this the maguey is the habitat of another kind of butterfly, Bombyx agaves, and of two species of hemipterous insects, Lystra bombycida and Velia agaves.

THE PREVALENT DISEASES.

The prevalent diseases and those which cause the greatest mortality in the Mexican Republic, according to a valuable work of Dr. Orvañanos: "Geografia Médica de la Republica Mexicana," and of course different according to states and localities, are: Continuous fevers (including, I suppose, typhus, rheumatism, etc.); pneumonia (with bronchitis and catarrhal affections of the respiratory organs); intestinal affections (dysentery and catarrhal, in great part due to abuse of alcohol); intermittent fever (including pernicious, remittent and malarial); leprosy exists in certain parts, and pellagra and "*el pinto*" a cutaneous affection not sufficiently studied (in the States of Guerrero, Michoacan, Tabasco and Chiapas); goiter, cretinism occurs, deaf dumbness (limited); yellow fever (endemic on the Gulf Coast, in certain districts of the States of Vera Cruz, Tabasco, Campeachy and Yucatan; epidemic occasionally in large parts of the country, always confined to the coasts, but of both oceans); cholera visited almost the entire country in the thirties; smallpox, general, doing great havoc, as vaccination is not properly attended to; measles and scarlet fever; diphtheria (the Mexicans pretend that it was unknown until the last invasion of the French, who are said to have imported it; not extensive); whooping cough (limited).

Pneumonia and bronchial troubles, common and deleterious, principally in the higher parts of the country and during the cold season (fibrinous rare) and many other diseases; rabies occurs, so does lithiasis; liver abscess, even in persons who have never lived in the hot country nor had dysentery; tuberculosis is not frequent, but especially deleterious in the hot lands; tetanus, not rare in the hot low lands, traumatic as well as neonatorum; snake bite very rare; insolation never heard of.

One of the particular features of our climate is the almost total absence of typhoid fever. Indeed, most of the Mexican physicians assert that it never occurs. I myself, and other foreign physicians who have observed typhoid in Europe, am not of that same opinion, but we admit that it is quite rare and never takes an epidemic form.

Another strange phenomenon is observed with regard to typhus. That disease is endemic and epidemic all over the elevated table land and causes numerous deaths. It seems that an elevation over the sea of less than 4,000 feet is quite unfavorable to its production and establishment and we may practically say that it does not occur in the low lands. Here Dr. Orvañanos is decidedly mistaken in his geography, when he says that typhus occurs in places where physicians of thirty or more years practice affirm to have seen but one case or none at all, and those isolated cases might have been imported.

It would seem that the habitat and conditions of development of yellow fever and typhus are precisely the reverse and that where one is endemic the other does not find a favorable ground. How that is remains unexplained until now.[1]

VICIOUS READING DISTANCE AS A CAUSE OF ASTHENOPIA.

Presented to the Section on Ophthalmology, at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

BY CHARLES HERMON THOMAS, M.D.
PHILADELPHIA, PA.

The review in outline of a single typic case must serve to illustrate the present topic.

J. B. J., male, student, aged 15 years, consulted me in October, 1896; wearing weak, minus compound cylindricals giving vision $\frac{6}{6}$ in each eye. It was stated that the refraction had formerly been hyperopic and the progress of the myopia rapid; had been refracted some months previously at competent hands and no additional myopia had since developed. Glasses were left unchanged. Muscular tests, including tropometer, gave no indication of heterophoria. Ophthalmoscope shows slight striation with slightly heightened color. Asthenopic symptoms were very distressing. He complained chiefly of brow pain on use of the eyes in reading, which was accompanied by nervous depression of a disabling character. These symptoms, however,

[1] With this paper was shown a box containing Mexican plants that were used for ptizans, sent by Dr. Semeleder specially for this Section.

were absent during vacation periods. He had much difficulty in his school work, was backward in his classes, at least two years behind those with whom he started, though he was intellectually bright and a member of a talented and scholarly family. The question of his entire removal from school was, and for some time had been, under consideration. The book in reading is held habitually at something less than *seven inches*, though as his vision for distance would indicate, he reads the smallest type at thirteen to fifteen inches with entire ease. I advised the strict adoption of a thirteen-inch reading distance, which being tested for one week, complete relief of symptoms was reported; he has been able to keep up with his studies without difficulty. Two months later the same favorable report was confirmed.

I refrain from the further citation of cases, though my note-books show a number closely allied to the one just related. Many must have seen cases of this class, notwithstanding which it is probable that they are not as frequently recognized as their importance calls for. Plainly in this instance the asthenopia and the nervous symptoms were of combined accommodative and muscular origin due to the vicious reading distance. It will be seen that the strain here thrown upon the ciliary muscle amounted to about 3 D. beyond that normally employed, aggregating when the eyes were used in reading about 6 D. of accommodative effort; while at the same time there was an equivalent muscular strain involving a like number of meter angles of active convergence.

The habit of holding the eyes too close to the work is one common among school children, and experience shows that many of them can not bear the strain involved without serious ocular and nervous damage.

Vicious reading distance, as a cause of asthenopia and apart from its relation to myopia, appears to be deserving of more consideration than it has yet received. As to the cause of the condition, it is doubtless a continuation of the habit of infancy of holding objects close to the eyes to obtain the larger retinal images; aggravated and confirmed by faulty relations of study tables and school desks. As to its correction the prognosis is not always encouraging. Few patients will be found to yield such implicit obedience as did the one in question. Indeed the difficulty in securing any considerable improvement in this respect, even with the aid of teachers and parents, is often almost insurmountable.

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DISCUSSION.

Dr. EDWARD JACKSON, Philadelphia—This matter has seemed to me to be one of a great deal of practical importance, but one of its direct difficulties is to get patients to realize this. I think some times after an elaborate examination and the prescribing of glasses, that if we bring out the point that simply by holding the book one, two or three inches too close to the eyes the patient can undo all the good work of the glasses, he might be induced to appreciate the importance of it.

The harm of excessive accommodation is perhaps not fully measured by the number of diopters, if our theory of accommodation is correct, and it depends on elasticity of the lens. The lens acts like a spring, and we know it takes more force to affect a spring after it has been deflected than to deflect it to the same extent in the start. The same principle may apply to the work of the ciliary muscle. A patient using 3 D. of accommodation more than necessary is giving more than twice the effort necessary for 3 D. of accommodation.

There is a reason for this vicious working point in the fact that the larger images are easier of mental recognition than the smaller ones. That accounts for the habit that all infants have of holding things very close.

Dr. J. A. LIPPINCOTT of Pittsburg—I have had an opportunity of observing several cases of the kind reported without esophoria in the majority, but in one with esophoria it seemed to be sufficient to account for the malposition. I found all the cases benefited or cured by wearing a frame attached to the head, upon the distal end of which was a support for holding the book to be read. In that way the patient can not move the head without moving the book, and the proper distance is maintained.

Dr. WILLIAM THOMPSON of Philadelphia—I have under my care now a case very nearly like the one reported. A very intelligent lady is preparing herself for the position of librarian and she is anxious to do many hours of near work. A few years ago she had 3 or 4 D. of myopia; it is now about 6 D., but she is wearing her old glasses which I allow her to use. She has about 2 degrees of esophoria. I have found it impossible to make her read at the proper distance though she has been told over and over again. When she writes she puts her head down with the nose almost against the paper. She suffers with headaches because she persists in removing her glasses and reading within her far point.

THE USE OF FULL CORRECTION CYLINDRIC GLASSES IN ALL CASES OF ASTIGMATISM.

Presented to the Section on Ophthalmology, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY LOUIS J. LAUTENBACH, M.D.
PHILADELPHIA, PA.

I believe that the entire correction of the astigmatism present in every eye, is a necessity, that is, provided the eye is used at all for near work. If there is no use for a knife there is no need to sharpen it, but just as soon as the eye is used as an instrument for seeing, its refraction must be so adjusted that the ciliary muscle fibers act equally, and not unequally as in astigmatism, to produce a clear, distinct image on the retina.

The disturbances of the recti muscles of which we hear so much today are in a great part but a development of nature's effort to allow the tired ciliary muscle some rest by presenting on the retina an image which requires other fibers of the muscle than those previously exhausted, to do an extra share of work, relieving those which have become tired from overuse. Of course the neurotic element in developing recti disturbance is a very important one, but is often only the reflex condition brought about by the train of pathologic circumstances portrayed.

In addition to the effect on the recti muscles exerted in the manner described, there is still another influence at work whenever there is present any astigmatism whatever. In a paper presented to this Section at the Baltimore Meeting, I advanced a theory as to the formation, retention and vant of retention of the normal corneal curvatures, and I think demonstrated that the recti, oblique and the ciliary muscles were, in addition to the influence of the eylid, the pressure of the orbital cavity and structures, concerned in the retention and alteration of the corneal meridians. In a paper recently printed in the *Ophthalmic Record*, I recorded some observations on the influence of nasal affections on these curves, exerted through reflex influence on the recti and oblique muscles. Now, if the muscles can and do affect the curvatures, does it not seem reasonable that the reflex influence of an indistinct image on the retina and an unequally tired ciliary muscle can and does exert itself on the oblique and recti muscles to such an extent as to occasion insufficiency of the recti with disturbances of the obliques as well, and does it not then

follow that some of the cases which now have prisms used, and others in which graduated tenotomy plays an important part, are but such in which the muscular balance should not be interfered with, as the inequality of the muscular action is but Nature's method to relieve a pathologic condition by the rest cure? Should we not rather re-examine the eye as to the refractive error, especially as to the amount and axis of the astigmatism present, correcting it fully, as it may have varied since the preceding examination, not being always a constant quantity. Then, in addition, give the eye the nearest approach to perfect rest possible by abstention from close work.

I feel confident that if in cases of disturbed muscle balance, work in accordance with the suggestions here presented be instituted, there will be quite a group of these cases which will be curable without any thought of operation or of propping up of the apparently weakened muscles by prisms.

The theoretic conditions seem borne out by practical experience, and, in fact, they have been suggested by the results obtained through the re-examination of heterophoric eyes and the use of full astigmatic correction glasses.

DISCUSSION ON PAPERS OF DRS. DEAN AND LAUTENBACH.

Dr. L. J. LAUTENBACH of Philadelphia—There is a thought that I would like to give voice to here, and it is a growing one, that is that the lenticular astigmatism does not remain constant, but varies, under some conditions, from moment to moment. I have had a patient wearing astigmatic glasses correcting in part the corneal and lenticular astigmatism, using one set of glasses for near and another for far work and I have tried in every possible way to obtain a glass that would combine the same cylindric effects, and have failed to do so.

Dr. J. A. LIPPINCOTT of Pittsburg—In regard to the statement made in the paper, there was no way of explaining the discrepancy between the general refraction and the corneal refraction as given by the Javal ophthalmometer except by the lenticular astigmatism. I have not very infrequently seen, in cases from which cataract had been removed, a decided difference between the real refraction and the corneal refraction as shown by the ophthalmometer. This astigmatism I assume to be found in a peculiar curvature of the posterior part of the eyeball. The posterior curvature of the cornea may perhaps be an influential factor, the anterior portion being the part determined by the ophthalmometer.

Dr. W. L. THOMPSON of Indianapolis—Did I understand Dr. Lautenbach that he would correct the full astigmatism no matter how high the degree? Would you if there were five or six degrees in the vertical meridian and as much in the oblique? I would expect the patient to have diplopia under the circumstances.

Dr. G. E. DEAN of Scranton, Pa.—Dr. Lautenbach brought out one interesting point in regard to the rapid variation of the conformation of the lens. This may be the reason why so many cases, after very careful correction by good oculists, change within the first eighteen months and require a re-examination and stronger correction, and then remain in the same condition for several years. I have seen a patient while being examined by the ophthalmometer change the conformation of the lens to the extent of 0.5 D. and it is a very interesting thing to watch. It is done by muscular action. In regard to Dr. Lippincott's point, I did not intend to exclude the conditions at the posterior pole of the eye.

Dr. L. J. LAUTENBACH of Philadelphia—In answer to Dr. Thompson, I would say that I never fail to order a full correcting cylinder, but may vary the general refracting glass.

Medical Law Unconstitutional.—According to the *Idaho Daily Statesman*, the medical law in Idaho has been declared unconstitutional, having passed the Senate irregularly. This was the decision of the Supreme Court, December 4, in a case brought to compel the Board of Medical Examiners to issue a license to the plaintiff to practice medicine. The decision virtually makes the Board of Medical Examiners a thing of the past.

EXAMINATION OF THE EYE BY OBLIQUE ILLUMINATION, WITH THE BINOCULAR MAGNIFIER.

Presented to the Section on Ophthalmology at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY EDWARD JACKSON, A.M., M.D.

PROFESSOR OF DISEASES OF THE EYE IN THE PHILADELPHIA POLYCLINIC; SURGEON TO WILLS' EYE HOSPITAL.

PHILADELPHIA, PA.

The original form of the binocular magnifier was that of two partial lenses cemented together at an angle. Its proportions were not what have since proved to be the best, but they were sufficiently good to make it a very practical working instrument, as soon as it had been learned how to use it. But the writer's first attempt to employ it, persisted in until it caused severe eyeache and headache, resulted in complete failure; so that the lens was thrown aside for weeks before the second attempt was made. The same difficulty has been experienced by others.

The use of such lenses seems easiest to young persons who have worked little with optical instruments, and are accustomed only to normal binocular vision. In proportion as one has learned to use monocular optical instruments, like the microscope and ophthalmoscope, and especially the ordinary magnifier or corneal loupe, is the difficulty of learning to see through the binocular magnifier increased. Still this difficulty is not, for any one, greater than the difficulty of learning to use the ophthalmoscope; and when once you have learned to see through it the difficulty of the instrument has been overcome. The appearances that are to be studied with it are those with which we are already familiar by binocular vision, or through the monocular magnifier, only that these appearances are with this instrument more striking and definite, and the finer details are brought out and made more prominent. The first difficulty is greater than most persons would suppose; but that first difficulty having been mastered it is an easy instrument to use.

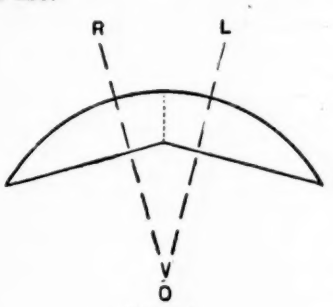

Figure 1.

The difficulty is decidedly greater with the simple decentered double lens (Fig. 1) than with the lenses and prisms mounted in separate tubes. One reason for this is, that with the former one eye can see both halves of the lens, and the surgeon accustomed to exclude one eye in working with other optical instruments, invariably does the same with this and becomes conscious of the double images seen by one eye through the two halves of the lens, instead of selecting and fusing the proper images presented to the two eyes, and excluding what is, in this examination, irrevalent.

Another difficulty experienced with this original form of the lens comes from the reflections from its

surface. In a room with diffused illumination this may quite prevent one from seeing through the lens, even though he be familiar with its use. In a room properly darkened for oblique illumination such reflections are readily avoided.

The later form of magnifier, inclosing the lenses in the tubes (Fig. 2), gets rid of annoying reflections altogether. It also prevents one eye from seeing through both lenses. With this form of instrument, I have not found any one possessing good binocular vision, who could not get the binocular effect at the first attempt with the magnifier, although it might readily happen that false adjustment of the instrument, or the holding it improperly with relation to the eye looked at, or with relation to the surgeon's eyes, would prevent this.

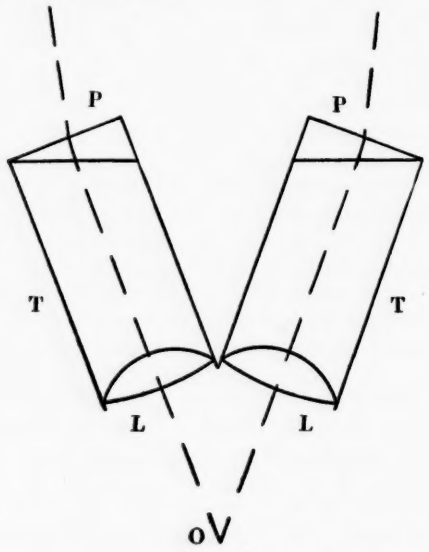

Figure 2.

Every ophthalmic surgeon knows that any new pair of glasses must be used for some little time before they will prove satisfactory. This is eminently true of such strong lenses as are furnished in the binocular magnifier, especially as they are used quite intermittently. One has, with it, to learn the fusion of images rather more diverse than he has before attempted to fuse; and perhaps it should really be a cause for surprise that so many ophthalmic surgeons have so quickly gained sufficient familiarity with the instrument to make it of practical service.

Adjustment.—The most important point in the adjustment of the instrument is that the prisms shall be so turned as to bring the two images for the respective eyes to the same level. Any one free from hyperphoria can make this adjustment by holding the lenses at rather less than their focal distance from a sheet of paper on which is a straight line. The instrument is held with the bar joining the two tubes parallel to the line which is to be seen through the tubes, the right eye looking through the right tube, the left eye through the left. The eyes are not brought close to the diverging ends of the tubes, as in using the instrument, but are withdrawn some inches from them, so that the portion seen through one tube does not appear to coincide with the part seen through the other tube, but the two areas appear to lie side by side, each crossed by the line which is used at a test. Under these circumstances the line should appear continuous across both areas. If in one area the line appears higher, it shows that the apex of the prism of that side is directed too much upward, and this is to be corrected by properly rotating the prism, having first loosened the screw that binds it. When the line is thus made continuous across both fields the instrument has been adjusted, and the binding screw should be again tightened. The best adjustment is with the bases of both prisms turned exactly toward the nose, in which position the line appears continuous in the two tubes, and when made to cross the middle of the field is also continuous with the line as seen outside of the tubes. But if both prisms are turned equally up or equally down, a slight deviation from this exactly horizontal position of their bases is of no practical importance.

In the matter of adjustment of the width between the surgeon's pupils, no special attention is necessary, since it matters little whether the surgeon's pupil comes opposite the nasal or the temporal portion of the prism. The adjustment can, however, be effected by varying the distance of the lenses from the surgeon's eye. The diverging ends of the tubes are close enough together to suit a very narrow interpupillary distance, if the eyes are brought close to the end of the tubes; but by withdrawing the eyes from the ends of the tubes the widest interpupillary distance can be equally well accommodated.

In adjusting the position of the object it must be borne in mind that with this instrument each eye can see only within a tubular space, and both eyes can see the same object only when it is held at the intersection of these tubular spaces. The lenses and the inclination of the tubes are calculated to give emmetropic eyes distinct vision, with little or no effort of accommodation, at the distance of this intersection. If one has high myopia, he must either have the lenses in the instrument replaced by weaker lenses; or he must have the instrument adjusted so that the tubes will meet at a slightly greater angle, so that the intersection of their fields of vision will occur closer to the lenses. To be used by a surgeon of high hyperopia, the tubes of the instrument should be more nearly parallel, or the lenses should be made correspondingly stronger.

Aberration.—The surfaces of the lenses are so selected as to reduce spherical aberration to the minimum, by making the radius of curvature of the surface toward the surgeon's eye the shorter, and the reducing of curvature of the surface toward the object. The simple lens is made plano-convex, and the proportion is 1 to 6 for the lenses mounted in tubes. Some aberration may, however, be noticed at the periphery of the field, with the stronger lenses employed. The field has been made as large as was available, without resorting to some combination for the correction of aberration. It has seemed to the writer that simplicity and cheapness were very much more important than the slight gain to be made by correcting aberration through the use of a complex lens.

Chromatic aberration is never noticed except when one looks at black lines on a white ground. Then it becomes perceptible, although the two eyes correct each other so that in the center of the field the lens gives no chromatic effect. What dispersion does occur at the center of the field is due to the prism. Now the prism before the right eye (with its base to the left) gives to a black line running perpendicular to the visual plane, a red fringe on the right border and a blue fringe on the left. The left eye, looking

through a prism with its base turned toward the right, sees the same black line with the red fringe on its left side and the blue fringe on its right. If the lines be brought to the center of the fields for both eyes, so that dispersion is as great in the one image as in the other, their combination in binocular vision causes the color effect to almost entirely disappear, giving an achromatic image.

If, however, such a line be seen at one side of the field, the colors seen by the eye of the same side will predominate and become noticeable in binocular vision. If while looking through both tubes, one eye becomes excluded from the visual act, as by habit from the use of other optical instruments, the colors seen by the eye used may be noticed. For looking at objects like the anterior segment of the eye, that do not present the especial contrast of black and white, no chromatic aberration is noticed.

Strength of lens.—The stronger the lenses employed the closer must they be brought to the eye looked at when in use. The strength that it is possible to employ is therefore limited as the strength of the monocular corneal loupe is limited. The strength of lens, of course, directly determines the magnifying power. The writer had supposed that within such limits the greater the magnifying power the more useful would the instrument be, but experience shows that this is not the case.

For studying certain minute details of the iris or cornea the strongest lenses that can be used, probably about one-half inch lenses magnifying 20 diameters, may be of service. But for ordinary clinical work, including the inspection of the cornea and iris, much weaker lenses will be found of more general service. Thus, even the one-inch lens is too strong to see at the same time, with comfort and profit, the iris in normal position and the cornea. A weaker lens, as the 2 inch, 20 D., will give a much better idea of the depth of the anterior chamber; and is quite as good in discriminating the depth of opacities in the cornea and crystalline. In general, it may be laid down that it is wise for the surgeon to start with the binocular lens, not stronger than the monocular magnifier that he has been accustomed to employ.

Value.—The benefit of the binocular magnifier in giving a better idea of the relative depth of the objects seen is obvious. An equally important benefit, which would scarcely be expected from *a priori* consideration, lies in the increased vividness of the impressions from binocular, over those obtained in monocular vision. We are accustomed to think that one eye can see just as much as two. And in a strong light, for the recognition of perfectly familiar objects, this may be almost true. Still, even with the best illumination, and such familiar objects as test-letters, if the two eyes see about equally well there is always a distinct gain in acuteness of vision when the two are used together.

If the illumination becomes feeble this gain is very much greater. If one trying to find his way in a darkened room will cover one eye, he will notice a very great reduction in his power of recognizing objects. Something of the same sort is true of vision with the best illumination, if the objects to be recognized are unfamiliar. Only one who has tried it can appreciate the increased force and definiteness of the visual impressions, obtained through the binocular magnifier. By such impressions points will very often be recognized that would otherwise quite escape the observer; although after his attention was drawn to them he might be able to make them out fairly well with the monocular image.

Of the use of the instrument mounted on a headband, Fig. 3, for operations I have only to say that it is a great help in the removal of small foreign bodies from the cornea, and in operations upon the iris or lens capsule. In certain points, as the recognition of incarceration of the iris, or in the opening of the lens capsule, it is a decided help for cataract extraction. Of course, weaker lenses which would be of service in other operations, could be mounted in this same way. Yet as they were made weaker the advantages of the instrument over a special pair of operating spectacles would diminish. Probably with lenses of the same strength as those so far employed in eye work, or even with stronger lenses, the instrument may be found serviceable in dentistry, and in certain operations on the skin and hair bulbs. It seems certain that the binocular simple microscope will give very important aid as an instrument for study and investigation in the biologic sciences.

Figure 3.

The different forms of the magnifier are made by Messrs. Wall & Ochs of Philadelphia.

DISCUSSION.

Dr. C. F. CLARK of Columbus—I would like to ask whether, in case of hyperphoria that does not require correction for comfort, Dr. Jackson would consider it worth while to have an instrument constructed with particular reference to that, or should it be corrected on the glasses being worn.

Dr. JACKSON—I think an amount of heterophoria that might not cause serious trouble in the ordinary use of the eye might be a considerable obstacle to learning the use of the instrument, particularly if it were hyperphoria. It can be readily compensated for, however, by simply turning the prism, which is adjustable.

CONGENITAL OPACITY OF THE CORNEA.

Presented to the Section on Ophthalmology at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY H. MOULTON, M.D.

FORT SMITH, ARK.

The recent articles by Tepljaschin (*Arch. Ophth.*, Vol. xxvi, p. 74) and by Barbacheff (review in *Ophth. Rec.*, Vol. vi, p. 88) have stimulated interest in the rare anomalies of corneal transparency of congenital origin.

The point of practical interest is to determine whether such a case is due to arrested development or

to an inflammatory process, especially interstitial keratitis of syphilitic origin *in utero*.

My case was that of a boy seen Nov. 14, 1896, at that time 8 years old. The case had also been seen by my colleague Dr. W. G. Smith in January, 1890, who noted as follows: "Total opacity of left cornea, said by parents to have been present from birth. The parents also stated that opacity would sometimes clear up so that the outline of the pupil could be seen. V.=Pl." There was no record made of nystagmus, but a concomitant convergent squint was noted. To me the parents made the same statement, viz., that the opacity was discovered within a few hours after birth, and that there had never been any redness or secretion about the eye. This statement can be credited, for the father was of sufficient intelligence to have observed correctly. The opacity occupied the whole of the cornea but was most dense in an area above and to the nasal side of the center. It was least dense below and to the temporal side, and through this latter area by focal illumination the outline of the pupil could be dimly observed. The superficial and middle layers were the ones that were opaque.

The diameter of the cornea was found by measurement to be 1.5 mm. less than that of its fellow.

The right eye also presented interesting conditions. The cornea was perfectly transparent and the eyeball was normal in shape and size, but the eye was myopic and amblyopic. V.=$\frac{15}{200}$. Under a strong mydriatic with —5 D. Spher. V.=$\frac{15}{80}$. Owing to nystagmus the fundus was difficult to explore, but changes were made out in the papillo-macular region. These consisted of a thinning of the retina and choroid, greatest at the temporal side of the disc and of a pigmented stippling about the macula with a few pin-head sized spots of pigment irregularly placed about half way between the macula and papilla. A marked horizontal and rotary nystagmus affected both eyes. After wearing glasses a few weeks this still remained, but to a much less degree.

The parents gave no history of syphilis and neither they or the boy presented any objective evidence of it.

It is needless to call attention to the fact that the best text-books have very little to say on this subject, and that cases are very seldom met with or reported. I shall not take up time with an account of the literature, but I have imperfectly studied the published accounts of ten cases. No two of them were alike, and in none of them was the opacity complete. Manz remarks that cases of congenital total opacity are extremely rare. In six of these cases both eyes were affected; in four, but one eye. Of the first, three were stated to be developmental and three inflammatory. Of the latter, three were developmental and one inflammatory. In each instance the inflammatory cases were traced to interstitial keratitis of syphilic origin. From these cases it would seem that where a single eye is affected, arrested development is most likely to be the cause of the anomaly. Another fact is made indisputably evident, viz., in all the cases of syphilitic inflammatory origin the deep layers were the only ones affected by the opacity. This was proven microscopically in some of the cases. In all the cases where the changes were described as developmental, these changes were found in the superficial layers. This observation is of value in deciding upon the etiology of a given case, and with other data in my own case, places it in the category of developmental anomalies.

Besides these two main forms of congenital opacities De Wecker describes two other subtypes of the inflammatory variety, viz., those occurring in buphthalmos, and those in consequence of embryonic perforations of the cornea. But the two main types are the ones in which chief prognostic, diagnostic and therapeutic interest centers.

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ANOMALIES OF THE RETINAL PIGMENT EPITHELIUM AND THEIR CLINICAL SIGNIFICANCE.

Presented in the Section on Ophthalmology at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, Pa., June 1–4, 1897.

BY H. GRADLE, M.D.
CHICAGO.

The homogeneous appearance of the normal fundus of the eye depends in part upon the integrity of the retinal pigment epithelium, which acts as a turbid medium obscuring the structures behind it. Whenever these cells contain no pigment, or less than the usual amount, the choroidal vessels become visible, as in albinos and often in myopic eyes. In the present paper, however, I propose to consider not the absence of pigment, but the appearance due to its irregular distribution.

Structural changes in the retinal epithelium have been demonstrated anatomically by Donders, H. Mueller, Leber, Goldzieher and Fuchs, and were attributed by them to the influence of globular hypertrophies ("Drusenbildung") of the vitreous lamella of the choroid. According to Rosa Kerschbaumer (v. Graefe's *Arch. f. Ophth.*, Vol. 38, 1., p. 217) anomalies are found in the pigment epithelium in three-fourths of all eyes of persons over 50 years of age, but are confined mostly to the anterior (ciliary region) and extend only exceptionally toward the posterior pole. According to Kerschbaumer's description some cells increase in size even up to six times their normal dimension, and lose their well-defined contours. Their nuclei multiply and karyokinetic figures appear; degeneration takes place, the nuclei refuse stains, become pale and vacuolated. In some instances the entire cell disintegrates, leaving its pigment in a mass on the basal membrane. Some cells contain an increased amount of pigment, others less than normally, or none at all. The pigment grains themselves may lose their rod-like shape and become round, small and dark brown. Larger round masses of pigment may also be seen between cells. On the other hand, rarefaction of pigment alone may occur without other visible changes in the cells. Sometimes small areas are thus found devoid of coloring matter.

Since these changes incident to advanced age are mostly confined to the anterior part of the fundus, invisible to the ophthalmoscope, or seen only imperfectly, they seem to have been but little studied during life. There are, however, certain easily observed ophthalmoscopic appearances which can only be referred to similar anomalies of the pigment in the retinal epithelium, although these changes have not yet been anatomically demonstrated. I refer to the stippling or granular appearance of the fundus seen com-

monly around foci of choroiditis or retinochoroiditis. I have also noted the same granular condition during the retrogressive stage of optic neuritis, in which cases it seemed most pronounced in the area adjoining the optic papilla. In purely retinal lesions I have never observed this peculiarity.

The special object of this paper, however, is to call attention to the frequent occurrence of the same appearances in the fundus of children and young people suffering from severe asthenopia. While the healthy fundus of adults presents almost always a homogeneous appearance, I have observed a more or less pronounced stippling or "granular" condition in about 5 to 8 per cent. of young people examined by me on account of asthenopic complaints. Since all transitions occur between a perfectly homogeneous fundus and the extreme granular appearance, such as I shall describe presently, it is obviously impossible to state accurately the frequency with which this anomaly occurs. By limiting myself to those records which are fairly complete in details, and which refer only to well-pronounced appearances in the fundus, I can base this report on the histories of forty cases. These were all instances of what I have described elsewhere as exaggerated asthenopia, ocular discomfort out of proportion to any existing error of refraction or other local anomaly present.

The ophthalmoscopic peculiarities to be described are usually most pronounced in the inferior nasal quadrant of the fundus. Less commonly they extend around the periphery of the entire ophthalmoscopic field and least often are they seen at the posterior pole. It must not be overlooked that in dark subjects the macular region has often normally a slightly stippled appearance, which however, may be considerably exaggerated in these patients.

The peculiar granular appearance of the fundus I can not describe better than by comparing it to a surface covered with a mixture of black and reddish powders with preponderance of the latter. Most of the separate grains are barely within the range of visibility; occasionally a few larger black points are seen sometimes, but less commonly a few white specks of pin-point size can be found. There are often in the same fundus small areas with so little pigment that the choroidal vessels become visible. When the rarefaction of pigment is not so extensive the surface appears, in the words of Loring ("Textbook of Ophthalmoscopy," I, p. 50), not "smooth and hard like a cloth with no nap to it," but "like one that has a plush or velvety feel." Some authors presumably mean this condition when they speak of a "wooly fundus." The condition is always symmetric in both eyes, though sometimes more pronounced in one.

There are probably various reasons why these appearances have been so little noticed in literature. Occurring in eyes not otherwise diseased, they are easily overlooked, especially in the inverted image, unless specifically searched for. Moreover, when not pronounced these appearances would be classed by most observers as within the normal range unless systematic comparisons were made. Yet the infrequency of this granular appearance in perfect eyes and its striking occurrence in connection with fresh choroidal disease suggest positively that it is a deviation from the normal type.

The subjects in whom I have observed this peculiar fundus were all of the neurotic type. In fact the *most striking appearances were found in the most pronounced cases of nervous disturbance.* The most extreme instance I have ever seen was in the case of a boy with very low vision, presumably due to some obscure brain lesion, but without ocular disease, where the fundus could literally be called finely "speckled." As evidence of the neurotic state I have on my records the histories of frequent headaches, chorea or habit-spasm, general restlessness, emotional irritability and sometimes other manifestations of general neurasthenia, such as fatigue on slight exertion, and insomnia. Very often the nervous condition was due to heredity. In other instances it could be referred to improper nutrition during infancy. In some, presumably digestive disturbances were of influence and a few times anemia co-existed, perhaps had preceded it. The ages ranged from 5 to 22 years with preponderance of the period from 8 to 15 years.

All these patients complained of ocular discomfort described sometimes as a burning, rather oftener, however, as an ache, and usually accompanied by more or less headache. While reading intensified the discomfort, most patients complained more or less even while resting the eyes, and indeed, very commonly, much discomfort was noticed at once on rising in the morning. Perhaps this was due to the effect of daylight upon the eye sensitized by darkness, for as a rule these patients were annoyed by strong light of any kind.

No indication was found that the pigment changes affect the acuity of sight. While perhaps a large number of the patients had less than perfect vision, there seemed to be no relation between the lowered vision and the amount of stippling either in the periphery or in the macular region. In no case was there any history of gradual failure of sight. Amongst forty patients (after the correction of all ametropia), V. was 20/20 or over in 10, 20/20 to 20/25 in 12, 20/25 to 20/30 in 12, under 20/30 or over in 3, and under 20/30 in one eye only in 3. In no case was there any intra-ocular lesion found to account for the low vision. In most instances the presumable cause must have been irregular astigmatism. Of the three patients with vision under 20/30, one had M. of 3.5 D.; in the other two no cause could be found for vision of 20/60. In the three instances of one-sided poor sight, the condition seemed analogous to the not infrequent amblyopia found in an eye slightly more ametropic than its fellow.

The refraction in the forty patients was: E. in 9, H. or As. under 1 Dioptry in 24, H. or As. over 1 Dioptry in 3, M. under 3.5 Dioptries in 4.

Very few so-called muscular anomalies were found. Not one of these patients had hyperphoria and none of them had esophoria over 1 degree or exophoria over 3 degrees. In thirty of them the converging power was normal; in ten, more or less reduced.

The asthenopia was of course not of refractive origin in the emmetropic patients, while complete failure to relieve by glasses proved that in fourteen of the cases with low degree of H. or As., the complaints were likewise not dependent on the ametropia present. In nine others correction of the error proved of some benefit, by allowing them to use their eyes with less discomfort, but could not be said to have given complete relief. In only four (three of these had errors above 1 D.) were all complaints stopped by glasses, as long as they were worn. Yet even these cases do

not come under the head of ordinary asthenopia due to refractive errors, since their complaints, though really dependent on the ametropia, were so decidedly more intense than we find to be the case in ametropes in good health. I have therefore come to the conclusion that in most of these patients the ametropia was only a complicating factor, and generally one of minor importance.

The pigmentary changes are not necessarily of a permanent nature. I judge so partly by the fact that I have scarcely ever seen a pronounced granular appearance in the healthy fundus of people much over 20 years of age, even when suffering from neurasthenic asthenopia of long duration. Furthermore, I have watched the fundus a number of times during months and once for several years in a patient with patches of localized choroiditis or chorioretinitis and have observed that the stippling surrounding the foci can change or even wholly disappear after the disease has come to a standstill. Six of the juvenile asthenopes in this series of forty I have been able to see for many months, and two of these I re-examined after the lapse of one and a half and six years. In all of these the pigmentary stippling seemed to have diminished to a variable extent. In the one seen after six years it had disappeared entirely, but I must add that in this one it had never been very striking.

The treatment of these patients consisted principally in relative rest of the eyes and general hygienic measures. While abstinence from eyework proved of benefit in most instances, it alone was not fully curative. Indeed, some of the children were brought to me on account of the persistence of their discomfort during school vacation. In some instances the temporary relief from the use of smoked glasses was very striking, more so than I have ever seen in any other form of functional disturbance of the eyes. In all cases in which the correction of existing ametropia gave any relief, even if only partial, the glasses were continued while under observation. For ultimate success, however, I trusted mainly to measures directed against the neurotic condition, liberal outdoor exercise, sojourn in the country, bathing, correction of habits and diet, iron if required and sometimes strychnia. About one-third of the patients lost their eye complaints and headache under this treatment, in the course of months; another third were improved to a variable extent, while the balance could not be watched a sufficiently long time to be recorded regarding the final outcome.

The exact significance of the pigmentary changes described is not made plain by these observations. It must not be forgotten that cases of very similar clinical history, *but with homogeneous fundus*, are not uncommon. On the other hand, the frequent association of stippling and granular appearance with this exaggerated asthenopia of young subjects and its rare occurrence in eyes without complaint suggest a definite relationship. It does not seem probable to me that the changes in the pigment epithelium are the direct cause of the asthenopia. Yet they presumably contribute to make the eye more sensitive. The occurrence of similar changes in these cells around choroiditic foci suggests that they may result from nutritive or circulatory disturbances in the choroid. What role such disturbances play in asthenopia of the type described we do not know. At any rate the greater prominence which the pigmentary changes present in markedly neurotic subjects raises the question whether instability of the central nervous system may not reveal itself by the liability of the retinal pigment epithelium to structural changes. For these cells like the retina proper are embryologically a part of the brain.

DISCUSSION.

Dr. G. E. DE SCHWEINITZ of Philadelphia—I have also observed the cases he has described as if grains of powder were dusted over the fundus. We used to call these cases, when I was in the Hospital, powder-grain fundus; I think Dr. Risley gave it the name. I have not noticed any relation between asthenopia and this fundus condition. In the most pronounced case I ever saw I thought of having a consultation with some of the older men because I thought there might be some unusual change going on of grave importance, which I had never seen. It would be interesting to get one of these cases for hystologic examination.

Dr. HAROLD GIFFORD of Omaha—I would like to ask if Dr. Gradle has not examined a large number of children that complained of nothing whatever and yet presented the same kind of changes in the eye. I think it is purely an anatomic condition and has nothing to do with the asthenopia.

Dr. EDWARD JACKSON of Philadelphia—I think I have noticed something of the kind among school children, at least such cases occur without being noticeably connected with eye symptoms. Two of the most striking cases I recall now occurred in young persons under 20, and the father of one of them presented very much the same appearance.

Dr. CASSIUS WESTCOTT of Chicago—I have observed a number of these cases and have studied the condition chiefly in the children. I did not relieve by correction of the error of refraction and that has made me think the condition accountable for the asthenopic symptoms. I have not as Dr. Gifford suggests examined any number of children without errors of refraction to see whether the condition exists.

Dr. A. B. HALE of Chicago—My dispensary work is done near a large manual training school and I examine a great many children that have nothing at all the matter with them; I have not seen these conditions.

Dr. J. A. LIPPINCOTT of Pittsburg—My attention has been drawn in this direction also and I used to think the changes were pathologic, but I have seen so many cases in which there was nothing of the kind and in which the asthenopic symptoms were quite as pronounced that I began to doubt my conclusions, and then in examining a great many otherwise normal eyes I have found this condition. At the same time I think it is a very important point and we are indebted to Dr. Gradle for calling attention to the subject so that we may investigate it in the future.

Dr. J. B. JENNINGS of St. Louis—Some years ago Dr. Gunn of London, described very minute yellow dots in the retina, which he thought were always present in the cases of asthenopia, but I have never been able to see them even when he tried to point them out; still it may be well to make a search for them.

Dr. FRANK ALLPORT of Chicago—I have had an opportunity within the past four months of observing quite a number of typic Gunn's dots, especially in the region of the macula, among children.

Dr. HERBERT HARLAN of Baltimore—I have seen several cases where there were asthenopic symptoms that were relieved by glasses and some where there were no symptoms whatever.

Dr. GRADLE—I expressed some hesitation at the end of my paper in interpreting the phenomena. I did not say they caused the asthenopia but they probably increased the sensitiveness. I have seen it probably in cases where it did not provoke asthenopia. I always examine patients ophthalmoscopically and amongst many hundred young people examined the appearances did not seem to be present in a striking manner except where asthenopia was present, and that was always so excessive that it indicated a lessened resisting power of the central nervous system, hence I spoke of it as instability of the central nervous system.

EMBOLISM OF THE CENTRAL ARTERY OF THE RETINA.

Presented to the Section on Ophthalmology at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY C. F. CLARK, M.D.
COLUMBUS, OHIO.

The first instance in which a correct diagnosis of embolism of the central artery of the retina was made by the use of the ophthalmoscope was the classic case seen by that pioneer in ophthalmology, Von Graefe, in 1858, and described by Schweigger a few years later.

While there is a general agreement among ophthalmologists as to the phenomena of complete embolic obstruction of the central artery, the relatively rare instances in which a portion of the retina has retained its vascular supply and continued to perform its functions have been the subject of some differences of opinion among careful observers, and this fact would seem to warrant us in bringing to the attention of the profession such cases as may come within the range of our experience.

Case 1.—On Jan. 12, 1896, I was consulted by Mrs. C. E., aged 51 years, who was referred to me by her physician, Dr. Barcroft of Coshocton, Ohio, on account of the condition of her left eye. She had known of no defect in her vision until nine days before the above date, when suddenly while sweeping, she noticed what she described as a "glimmering" before the left eye and in a few moments the whole visual field clouded over with the exception of a small space near the center. Although not robust, her general health had been good with the exception of one severe attack of malarial fever from which she suffered some twenty years before and occasional mild attacks of the same disease in the spring and fall. She knew of no cause to which she could attribute the disease of the eye.

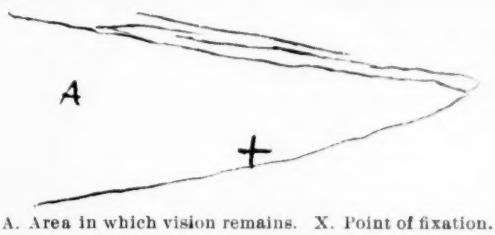
Her vision was R. E. $\frac{6}{7}$—, L. E. $\frac{6}{30}$—, seen only within a limited area near the disc and with this eye she could by the aid of a 4 D. sph. glass read Jaeger 9 with difficulty. The pupillary reaction could not be determined, as she had a few days before used atropia. In the right eye the visual field was apparently normal, while in the left it was irregularly elliptic and extended only from the blind spot to the macula. At a distance of one foot it measured two inches in its vertical diameter and three inches horizontally.

On examination with the ophthalmoscope it was found that the field of vision corresponded with the papillo-macular area, which was normal in color in the midst of a whitish, edematous zone surrounding the disc. The macula which, while not like that of typic, complete embolism of the central artery, presented a marked contrast to the surrounding pale retina and formed the apex of an irregularly triangular island of normal tissue, the base of which was formed in part by the disc. The upper and lower borders of the triangle were formed by vessels, the lower of which seemed to be a vein, while the character of the upper one was difficult to determine, though probably of the same nature. Both this upper vessel and a smaller one which extended some distance into the center of the normal area appeared to emerge from the disc at some distance from the central vessels and could therefore be said to have their origin possibly behind the situation of the embolus. A superficial hemorrhage of considerable size was observed near the margin of the disc about the upper vessel above mentioned and a small one on the vessel supplying the central portion of the triangle. The larger veins of the retina, especially the inferior, were somewhat distended, while the arteries were all quite narrow. No vessel of the so called "cilio retinal" variety could be made out and, indeed, there was ample nutrition supplied to the normal area by other vessels without resorting to the assumption of the existence of such a supply.

Case 2.—Mrs. J. W. M., aged 34 years, was referred to me by Dr. Buckingham of Springfield, Ohio, on Aug. 18, 1896, with the following history: While walking on the street the evening of the 15th, three days before her visit to me she had a fall, which, however, seemed to her of no significance as she caught herself with her hands and did not strike her head, but on awaking the next morning she found that the vision in her left eye was very defective and the field greatly limited. No cause other than the above fall could be discovered, as her general health had been good.

A physical examination by Dr. Rogers revealed a slight, soft, diastolic murmur along the left side of the sternum, heard with maximum intensity in the fourth intercostal space four inches from the medial line and so far to the left as the axilla. The general appearance of the eyes was normal, the pupils responded to light and there was no discomfort excepting that caused by the defective vision and limited field of the left eye.

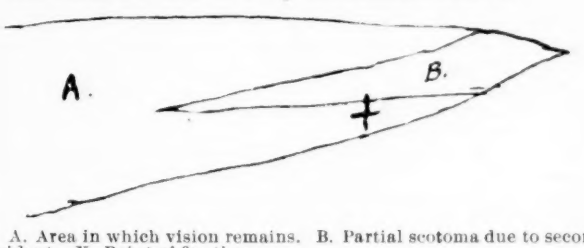
The vision of the right eye was $\frac{5}{5}$, and she read J.1 at 5 to 14 inches. In the left the vision was $\frac{5}{12}$, and the field, which was difficult to measure, seems to take the form of an irregular, acute-angled triangle, the apex of which was at a somewhat eccentric point of imperfect fixation, the center corresponding appoximately with the normal point of fixation, and the base to the temporal side. Outside of this area there was absolute blindness. The portion of retina therefore which retained imperfect vision extended in the form of an irregular triangle from a point near enough to the macula to give vision of $\frac{5}{12}$ to the disc and beyond it in a somewhat irregular zone into the nasal quadrant. This corresponded approximately with what was seen with the ophthalmoscope, namely, that while there was slight, general edema of the retina, an irregular, horizontal zone including the disc and extending toward both the nasal and temporal sides and increasing in width both to the right and left of the disc was fairly clear. Two vessels of apparently somewhat deep origin extended from the disc near its center to the inferior temporal quadrant of the retina, the upper one of which seemed to pass just beneath the macula and formed a rather sharp outline to the grayish edema which was to be seen in the lower portion and to a less degree in the upper portion of the retina. A small, well defined, independent vessel of deep origin could also be seen on the oppposite side of the disc extending into the nasal quadrant. Directing the patient to fix the eye as well as it was possible for her to do I obtained a visual field approximating the form outlined in the following diagram:



A. Area in which vision remains. X. Point of fixation.

The patient continued to enjoy the above vision of $\frac{5}{12}$ with the same visual field for more than three months, when her baby accidentally struck her in the left eye with a child's bow, which, without causing pain or other evidence of traumatism, instantly deprived her of this power and produced a long, narrow, cloudy scotoma in what had been the best portion of her narrow, triangular visual field. On April 16, 1897, when I saw her last, she could with difficulty count fingers at a distance of one or two feet when held so that the image should fall in the nasal portion of the limited field.

The patient, who is an intelligent observer of her own symptoms, drew the accompanying diagram to indicate the form of the scotoma which made its appearance after her recent injury, and it will be seen that it corresponds to what might be expected were an embolus to find lodgment or a thrombus be formed in the small macular artery mentioned above.



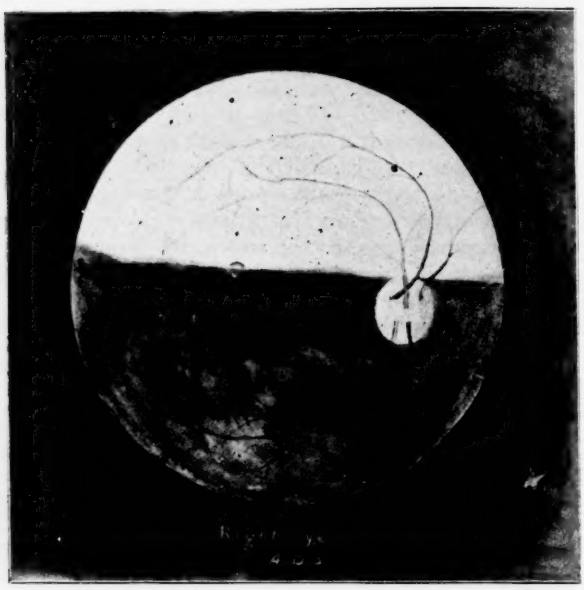
A. Area in which vision remains. B. Partial scotoma due to second accident. X. Point of fixation.

Case 3.—On Aug. 1, 1893, I was consulted by Mr. A. D. S., a botanist, 33 years of age, of good habits and of good general health, who gave the following history: While camping he awoke on the morning of the day before his visit to me with the sensation of a veil over the right eye and with vision defective in the lower portion of the field. He thought the visual field had increased since, but while a rough test revealed a normal outline for the left eye, in the right there was blind-

ness below a horizontal line through or a little above the center of the field. For three or four weeks he had been somewhat indisposed, complaining of pain in the chest. About sixteen months before, he had grippe followed by rheumatism, which did not, however, assume the acute inflammatory form. At one time , while suffering from grippe, he fainted and fell out of his chair. As the result of a physical examination made by Dr. Rankin it was determined that he had a slight cardiac murmur due to roughening which was the result of endocarditis, and as there was a tendency to recurrence of the rheumatic symptoms, he was given appropriate treatment.

His vision in the left eye was normal and the field was good. In the right eye the lower half of the visual field was defective, but the superior half was normal, as also was his central vision when tested at a distance. R. E. $\frac{4}{3}$—, L. E. $\frac{4}{3}$—. But when attempting to read he was hindered somewhat by limitation of the visual field, which made it difficult for him to quickly find the line beneath the one upon which his attention had been fixed. The general appearance of the eyes was normal and he complained of no pain.

The ophthalmoscopic appearance of the left eye was normal, but in the right was seen a most striking picture. The lower half of the retina presented the usual appearance, while the upper half was white and edematous. The lower border of this area of edema was clearly defined and it extended further to the temporal than to the nasal side. Above, it did not seem to extend to the extreme periphery. The arteries were a little smaller than normal and at the point of bifurcation above and near the disc there was a slight interruption of the line of light reflex which should be seen in the center of the artery.



The most important, and to me the most interesting feature of the case was a short, slightly crescentic red line lying above the apparently normal but well defined macula. This short crescent had its convexity upward, was approximately concentric with the macula and seemed to correspond with, and in fact, to be the upper segment of the cherry-red spot seen in cases of embolism of the main trunk of the central artery. In other words, the sharply defined lower border of the edematous area of the retina passed through the upper portion of the macula, and therefore, it was only at this point that the contrast was noticeable.

On Aug. 4, three days later, the patient detected some improvement in his vision in the defective portion of the field. The superior and superior temporal portions of the disc still seemed slightly swollen. The region of the macula was more evenly red and the concentric red spot above had disappeared. The outlines of the defective portion of the field of vision corresponded with those of the edematous portion of the retina as seen with the ophthalmoscope. (See diagram of retina and field of vision.)

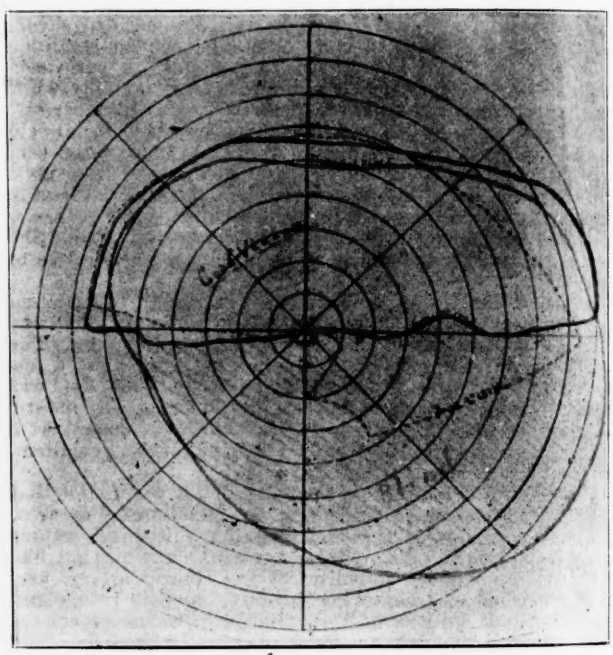
On August 12 the superior portion of the retina had assumed a more pinkish tint, but was still far from normal and there was no improvement in the visual field.

On October 5, sixty-six days after the appearance of the embolism, Dr. Rankin reported that a few days before Mr. S. had an attack of dizziness which he described as peculiar and not at all like that of ordinary vertigo, and his wife stated that he was for a few moments absolutely blind in the right eye. He told Dr. Rankin that on turning his head to one side he had a tendency to continue to turn it. Notwithstanding the above symptoms and marked anemia, and in spite of my remonstrances he continued his work.

On October 13 he stated that the lower portion of letters seemed slightly indistinct, which is in keeping with the fact that the upper portion of the macula was affected, but this indistinctness was not sufficient to prevent him from having vision of $\frac{4}{4}$— in each eye improved by the correction of his hypermetropia and low degree of astigmatism to $\frac{4}{3}$—, nor from reading Jaeger 1.

The ophthalmoscope revealed some pallor of the optic disc with slight indistinctness of outline at the upper border, possibly indicating very slight swelling. The superior retinal artery was somewhat diminished in size and the line of light in its center was very narrow, indicating marked diminution in its caliber. The dense white of the superior half of the retina was at that time replaced by an almost imperceptible blush of opacity slightly masking the normal pink beneath it. The field of vision had improved and objects could be seen at a point 15 to 20 below the line of central vision.

In June, 1894, I found that the central vision had remained good and there had been decided improvement in the visual field. The light sense was imperfect, but present in the defective portion of the retina.



On July 18, 1896, about three years after the embolism first made its appearance, a careful examination of this patient by Dr. Rogers still revealed normal central vision with a pale disc. It seemed that there was atrophy of the superior fibers of the retina and of the nerve fibers of the upper portion of the disc. The vessels in the superior portion of the retina were small and the retinal tissue was dull in appearance. In the upper portion of the visual field his vision was good. In a broad zone below the center it was dull, while the lower portion was practically blind.

Whether or not in this case the preservation of vision in the macular region was due to the existence of a cilio-retinal vessel is a question which might naturally arise, but I detected no such vessel, and Dr. Rogers assures me that in his recent examination he satisfied himself that none existed. Had there been such a supply I do not think the edema would have followed in so direct a line across the upper half of the macular region.

It is probable that there *never* was *complete* obstruction of the superior retinal artery, but it was sufficient to produce the sharply outlined area of edema which confined itself to the field of distribution of that vessel. In the macular area, however, the anastomosis of the smaller vessels with those of the inferior branch of the central artery was so complete as to preserve all excepting its upper quadrant from the temporary disturbance of function produced by the edema. Had the obstruction ever involved the whole caliber of the artery it is not probable that on the one hand the vision in the superior half of the retina would have been almost completely preserved, or on the other that the macula would have continued to perform its function so perfectly even at the time when the edema was most marked.

The fact that the edema, which in the days immediately after the occurrence of embolism, is usually found to correspond in a general way in its area of distribution with the area which remains blind, is merely an incident and does not stand in a causative relation with the permanent blindness is, I think, demonstrated by this case. It will be remembered that this edema did not extend to the periphery in the superior portion of the retina, while an examination at a later period revealed blindness of the extreme lower portion of the visual field and the ophthalmoscope discovered evidences of atrophy of the retinal tissue of the corresponding region. The lower portion of the upper half of the retina, on the other hand, which was the seat of the most marked edema, recovered almost perfect vision.

One would conclude from this, that whatever may be the temporary effects on vision produced by edema of the retina, the permanent effects in a case of embolism are produced by impairment of the nutrition of the nerve-fiber layer. If this occurs for only a limited period of time, as by cutting off the vascular supply, the nerve fibers do not seem to have power to recover their functional activity.

While the case I have just described is, so far as I can learn, unique in the fact that in it we had a crescentic or partial, cherry-red spot in the macular region, Cases 1 and 2 are of more real interest as belonging to a group which for a number of years has attracted the attention of ophthalmologists owing to the belief on the part of many, that by means of what are termed "cilio-retinal" vessels, the papillo-macular region obtains a blood supply which is independent of the central retinal artery.

In the crosier-like vessels, which in many individuals are seen to emerge apparently from the temporal border of the optic disc at such a depth in the nerve tissue as to suggest their origin in the choroid, and then curve upward and outward to be distributed to the papillo-macular portion of the retina, really belonging to the choroidal system and are not branches of the central retinal artery, we certainly should be able with the evidence afforded by the microscope and the ophthalmoscope in the number of cases of embolism of the central retinal artery which have been recorded, to demonstrate that fact. And if they are merely branches of the central artery, which having their origin at some depth in the nerve head, pass outward to its temporal sheath at a point behind the lamina cribrosa are then reflected toward its center as they emerge, and thus take the form which gives the impression that they come from the choroid, we should also be able to demonstrate that fact. That the question is one of great importance is apparent when we consider the comparative frequency of the occurrence of such vessels and the distinctive form which they assume.

De Schweinitz ("Diseases of the Eye," Ed. 1896, p. 113) states that "in a series of examinations Land and Barrett found this vessel present in 16.7, Veasey in 14.2 and the author [de Schweinitz] in 10.6 per cent." (It is possible that these observers may have included as "cilio-retinal" vessels all vessels of considerable size emerging from the disc at its temporal margin and distributed to the papillo-macular region.)

Dr. W. K. Rogers and the writer have for a few months made notes on this point in all ophthalmoscopic examinations. We distinguished between a vessel appearing near the margin of the disc and turning directly into the retina and one which had its apparent origin beneath the scleral ring and, after being directed toward the center curved again toward the periphery. This latter crosier-like vessel we classed as a "cilio-retinal" vessel, and in the examination of 310 eyes Dr. Rogers found it present in 8 per cent., while the writer in 317 eyes found it in 10 per cent. (Had all the independent vessels of deep origin been included, Dr. Rogers' percentage would have been 27.3 and the writer's 22.3.) What anatomic proof have we that the so-called "cilio-retinal" vessels originate in the choroidal system? In a somewhat extended search of the literature of the subject I have been able to find but one instance, that of Birnbacher (*Archives of Ophthalmology*, Vol. xvi, p. 32), in which the claim that an anatomic examination has demonstrated the presence of such a vessel is supported by what appears to be strong evidence. A plate which accompanies the description of this case would certainly seem to make clear that in this instance, at least, such a vessel did have its origin in the choroid. This was not, however, a case of embolism.

The ingenuity of the theory by which the occurrence of such an anastomosing, or independent vascular branch from the choroidal system explains the preservation of the papillo-macular area of the retina when an embolism has obstructed the central artery, seems to have had a peculiar charm for all who have written on the subject and to have led many observers to accept it without criticism, and whether or not such an anomalous vessel can be proven in any instance to have coexisted with the preservation of normal vision in this area, it is certain that in many instances writers who are generally careful observers, have fallen into the error of adopting this explanation where the evidence is entirely insufficient.

Professor Laquer (*Arch. of Oph.*, October, 1896, Vol. xxv, p. 525) gives abstracts of sixteen cases of embolism of the central artery with integrity of the temporal region of the retina, which he states are all he could find recorded. In addition to these the editor of the *Archives* mentions three other cases which should be added, and I have found two more mentioned in medical journals which seem to have been omitted. These, with the case described by Laquer and the two which I have described above, make a total of twenty-four. In the literature at my command I have been able to obtain somewhat detailed accounts of sixteen of these twenty-four cases; and it may be pertinent to ask how far do the results of a careful study of these clinical cases warrant us in concluding

that true cilio-retinal vessels were the means of preserving the integrity of the papillo-macular area of the retina? In answer to this question it may seem interesting, and in view of the claims that have been repeatedly made in favor of this theory, it is certainly surprising to note that in not one instance has the existence of what has been classed as a cilio-retinal vessel been demonstrated ophthalmoscopically. In not one was anatomic evidence adduced to prove that such a vessel was present, and while only four writers claimed the existence of a cilio-retinal vessel, three of these in the context made it apparent that they did not distinguish between a "cilio-retinal" vessel and a macular vessel of deep origin.

In conclusion, I would say that beneath the statement of the time-honored theory that in embolism of the central artery a so-called cilio-retinal vessel serves to preserve the papillo-macular area by virtue of its origin in the choroidal system, we must write "not proven."

THE TECHNIQUE OF RETINOSCOPY.

Delivered in the Section on Ophthalmology at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, June 1-4, 1897.

BY J. ELLIS JENNINGS, M.D.
ST. LOUIS, MO.

It is only within the past ten years that the value of retinoscopy as an objective test in the estimation of errors of refraction, has been fully recognized. The fact that, after a little practice, the kind and amount of refractive error can be ascertained quickly, accurately and independently of the patient, has made it deservedly popular. This popularity is largely due to the labors of Philadelphia men, particularly of Drs. Jackson and Thorington, and I therefore feel that it is quite appropriate that any additions I may have to offer may receive your friendly criticism.

The mirror which I use is plane, 2.2 cm. in diameter, with a central aperture 3 mm. in diameter cut through the glass. My objection to a mirror with the sight-hole obtained by merely scraping away the silvering, is that vision is obscured by the dust which unavoidably collects on the glass and which it is difficult to remove. The annoying reflections from the margins of the sight-hole are obviated by using a very thin piece of glass well blackened about the aperture. The mirror is set in a piece of metal 5 inches long and $1\frac{1}{4}$ inches wide. Over this is fastened another piece of metal which, when closed, protects the mirror from dust, and when open is used as a handle on the principle of a lorgnette. When not in use the instrument may be folded and conveniently placed in the vest pocket. Either the right or left eye may be placed opposite the central aperture by merely reversing the piece of metal in which the mirror is set. (See Fig. 1.)

The light.—In my experience the most brilliant and satisfactory light is obtained from the Argand burner or the Welsbach. Over this is placed Thorington's asbestos chimney, to exclude all light except that which comes through the largest openings of the revolving discs. The light is placed above the head of the patient and just far enough back to leave the eyes in shadow. My objection to a point of light from 5 to 10 mm. in diameter placed close to the eye of the surgeon, as taught by Jackson, is that the operator's movements are greatly restricted, and there is difficulty in focusing the light on the eye of the patient.

I have made careful tests by both methods and find one as accurate as the other. I therefore prefer the light placed over the patient's head, as it gives a more satisfactory reflex and at the same time enables the surgeon to study movements at a distance of from four to six meters if necessary.

Distance from the patient.—I always work at a distance of one meter from the patient and add a —1 D. sphere to the lens, which neutralizes the refractive error. The method of viewing the reflex at from four to six meters, as proposed by Randall, while accurate, is inconvenient, on account of the difficulty of focusing the light on the eye.

On the other hand, the determination of ametropia by measuring the variable distance of the surgeon from the patient, as taught by Jackson, is open to the objection that an error of one or two inches in the measurement would seriously affect the accuracy of the result.

Retinoscopy Mirror.

Apparatus for placing lenses in front of the patient's eyes.—For this purpose I have had an instrument constructed, called a skiascope, which was described in the November, 1896, issue of the *American Journal of Ophthalmology*. We all know how difficult it is, especially in children, to get a trial frame which fits properly and keeps the lenses accurately in front of the eye. We also know how fatiguing it is and how time is consumed in making the necessary changes in lenses. With the skiascope all these objections are overcome; the chin rest and stand can be so adjusted that the pupil is accurately centered and the patient made comfortable. The surgeon, seated one meter distant, uses his right hand to hold the mirror, and with the left controls the wheel which rotates the lenses in front of the eye. A disc close at hand indicates the strength of the lens presenting at the sight-hole. The instrument is absolutely under the control of the operator and saves fatigue and time, much to the satisfaction of both surgeon and patient.

DISCUSSION.

Dr. EDWARD JACKSON of Philadelphia—Dr. Jennings' paper and instrument illustrates that there are a great many differ-

ent ways of doing the same thing, and that one always finds the way he is accustomed to the most satisfactory. Taking up some of the points mentioned, first in reference to the sight-hole of the mirror, the objection that when the glass is left dust collects on it and is difficult to remove, I have recently met by placing back of the sight-hole a thin piece of glass like a cover-slip and cementing it on, so that it is just as easy to wipe and keep dust off the mirror as to keep it off our glasses.

In regard to protecting the unused eye from light, it is sometimes a little help to close the eye that is not back of the opening, but more of the time it is a help to keep it open, particularly when you are trying to find where the light is and turn it in the proper direction. There are times when I find myself closing one eye, but mostly I work with both open. As to the position of the light over the patient's head, that is the place for it, or back of the patient, with the concave mirror, and it is also moderately satisfactory with the plane mirror when you work at the distance of one meter or over. The whole question of light depends upon having the light area as definite as possible, and no matter what the source of it the image will not be definite unless it is focused on the retina; and in order to be so focused it must be situated at the distance for which the eye is adjusted. In making the test, when we get to the point of reversal, we have the focus of the patient's eye at our own; and in order to have the light source focused on the patient's retina at the same time, it must be near the position of the surgeon's eye.

If you attempt to work closer than one meter, placing the light over the patient's head is not satisfactory. If you come to one-third of a meter there is one and one-half D. of inaccuracy, and that greatly lessens the value of the test. For many eyes the one-meter distance is fairly satisfactory, and if you take it as routine method the light above the patient will do. But if you limit your use of the test to this method, you restrict its value. A small point of light, too, is not satisfactory if placed over the patient's head, but if brought close to the mirror it gives a more delicate test.

I have used a disc, not one so well arranged and complete as this of Dr. Jennings. But after using it for some months I went back to the trial set. I prefer a small trial set kept right at hand. I find it, on the whole, more convenient than any form of instrument or disc.

Dr. H. V. Wuerdemann of Milwaukee—The first instrument brought to this country was in 1887 by Donn of Oxford. In 1888 Burnett of Washington showed before this Section a disc skiascope, and about a year later I made a modification of it. Wood was the next man to put in an appearance with an instrument, which he uses with great satisfaction, based upon the same principles as those of Dr. Jennings. I would personally object to the size of this instrument on account of the space it would take up in the dark room, and in the examination more time is taken than is necessary.

Dr. J. E. Jennings—I think the idea of an extra piece of glass behind the mirror, suggested by Dr. Jackson, will be a very convenient thing, and we can thus keep the glass perfectly clean without rubbing off the silver. In regard to Dr. Würdemann's remarks, the hand skiascope is a very convenient and useful instrument, but an objection to it is that the patient controls the movement of the instrument and you are not always sure which aperture they are looking through, whereas my instrument records the number of the lens in front of the sight-hole and is under the control of the surgeon.

A METHOD OF EMPLOYING KANGAROO TENDON IN THE OPERATION FOR SHORTENING OCULAR MUSCLES.

Presented to the Section on Ophthalmology at the Forty-eighth Annual Meeting of the American Medical Association held at Philadelphia, June 1-4, 1897.

BY JOHN O. McREYNOLDS, B.Sc., M.D.
DALLAS, TEXAS.

Without attempting to review the subject of muscle shortening I will briefly present a method which has been quite satisfactory in my experience on account of the short time required for its performance, its freedom from pain, and the accuracy with which any degree of heterophoria may be corrected. It may also be successfully employed as an auxiliary in those cases of marked strabismus in which complete tenotomies alone will not entirely correct the deviation. The method is as follows: With broad fixation forceps provided with teeth sufficiently long to engage all the ocular tissues down to the sclera, grasp conjunctiva, capsule of Tenon and tendon of ocular muscle in such a way as to produce a loop of tendon. Then fix the loop thus formed by a single suture of kangaroo tendon embracing the ocular tendon. Tie the thread thus employed and leave it to be absorbed. In case there should be a desire to have the kangaroo tendon buried beneath the conjunctiva short incisions through this membrane will allow the thread to sink out of sight beneath the conjunctiva. The operation can be made in less time than one minute, involves no pain or subsequent discomfort and will correct with precision any ordinary degree of heterophoria.

A NEW OPHTHALMOSCOPE.

Presented in the Section on Ophthalmology, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY JOHN WELSH CROSKEY, M.D.
ATTENDING SURGEON TO THE WILLS HOSPITAL.
PHILADELPHIA, PA.

In the construction of this ophthalmoscope the object desired is to obtain a sufficiently large series of lenses in the most compact form and to permit of all the lenses being used without removing the instrument from the face.

When it is taken into consideration that to use an ophthalmoscope properly the accommodation should be relaxed, these advantages will be appreciated. The size of the instrument can be judged from the illustrations, which are two-thirds actual size, a point which will be valued by oculists who carry their ophthalmoscopes with them.

The ophthalmoscope itself consists of two discs, one for convenience called the lower disc, containing the weaker plus and minus glasses, ranging from + 1 to + 6 by single diopters and from — 1 to — 8 by single diopters; the upper disk containing the stronger lenses, ranging from + 8 to + 20 by alternate diopters and from — 10 to — 24 by alternate diopters.

It will be noticed that the discs are used independently and should the fundus require a stronger lens to explore it than is contained in the lower disc, it is not necessary to remove the ophthalmoscope from the eye; but, by simply pushing the mirror upward with the forefinger, so as to be opposite the lenses in the upper disk, as shown by the dotted lines in the illustration, the examination may be continued.

The sight-hole in the mirror is two millimeters in diameter, as it is found that a small sight-hole permits of a more satisfactory examination of the fundus through a small pupil.

A NEW OPHTHALMOSCOPE.

Presented in the Section on Ophthalmology, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY J. L. BORSCH, M.D.

PARIS, FRANCE.

In this instrument the first noticeable feature is the construction and placing of the mirror; this not only tilts but also revolves about its own axis. The second feature is that the body of the instrument is so constructed that it can be revolved around its own axis carrying the mirror with it. This gives the mirror a third motion, first, tilting; second, revolving around its own axis; third, revolving around the axis of the body of the instrument, whereby the user can place the mirror at any desired position while the arrangement of the lenses remain undisturbed.

There are two lens discs effectually covered and protected from dust and handling, one containing the following lenses: 1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11; 12 convex, and 0.50 and 13 concave. The other disc contain: 1; 2; 3; 4; 5; 6; 7; 8; 9; 10; 11; 12 concave and 0.50 and 13 convex.

These combined produce seventy-six numbers as follows: 0.50; 1; 1.50; 2; 2.50; 3; 3.50; 4; 4.50; 5; 5.50; 6; 6.50; 7; 7.50; 8; 8.50; 9; 9.50; 10; 10.50; 11; 11.50; 12; 12.50; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24; 25 both in concave and convex.

The second ophthalmoscope has the same arrangement of the mirror, viz., tilting and two rotary motions, only there is but one disc and a quadrant. The former contain the following lenses: 1; 2; 3; 4; 5; 6; 7; 8 concave and 1; 2; 3; 4; 5; 6; 7 convex, while the latter contains 0.50 and 16 concave, and 0.50 and 16 convex. The disc and quadrant combined produce the following numbers: 0.50; 1; 1.50; 2; 2.50; 3; 3.50; 4; 4.50; 5; 5.50; 6; 6.50; 7; 7.50; 8; 8.50; 9; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; 24 concave and 0.50, 1; 1.50; 2; 2.50; 3; 3.50; 4; 4.50; 5; 5.50; 6; 6.50; 7; 7.50; 8; 9; 10; 11; 12; 13; 14; 15; 16; 17; 18; 19; 20; 21; 22; 23; producing sixty-four (64) numbers in all, the same as produced by the Loring ophthalmoscope.

55 Rue Cherché Midi.

ANTINOSIN IN THE TREATMENT OF DISEASES OF THE EYE AND EAR.

BY W. FRANKLIN COLEMAN, M.D.

PROFESSOR OF OPHTHALMOLOGY IN THE POST-GRADUATE MEDICAL SCHOOL, CHICAGO, ILL.

For some time I have felt the need of an antiseptic remedy which would be efficient, and non-irritating to the eye. While formalin is one of our best, if not the best of antiseptics, a solution of even 1 to 5,000 causes considerable pain. The action of sublimate is very superficial, and clinically unsatisfactory. Boric acid and iodoform are only very slightly antiseptic. I have also desired to get some of the properties of iodin, the tincture of which is well known to be curative when applied to ulcus corneæ; on account of its irritative effects its usefulness is very limited.

I have recently used antinosin in a considerable number of cases (both in my private and clinical practice) of catarrhal, palpebral and follicular conjunctivitis, phlyctenulæ, ulcus corneæ, blepharitis marginalis, and also in otitis media purulenta. In a 1 to 2 per cent. solution it does not cause pain in the eye or ear, the patient rarely complaining of any unpleasant sensation. Antinosin is the sodium salt of tetra-iodo-phenol-phthalein. It is a dark blue amorphous powder, readily soluble in water and alcohol, odorless, non-toxic and non-irritant. It makes a purplish solution in water. The stain caused by very strong solutions can be readily removed by washing.

I refer to a few cases taken at random, which were treated by antinosin:

Case 1.—A. G., aged 48 years, had been treated for a long period on account of trachoma. The palbebral conjunctiva was smooth, but the patient complained of great sensibility to light and inability to read. Various applications were used, such as boric acid powder and massage, red oxid of mercury and massage, weak solutions of nitrate of silver, etc. These afforded very slight relief. A 1 per cent. solution of antinosin dropped in the eyes, t.i.d., afforded him in a few weeks, comparative comfort, relieved the photophobia and enabled him to do a moderate amount of reading. It also acted promptly in relieving several attacks of recurring ulcers of the cornea.

Case 2.—Miss G. B., aged 8 years. A case of long standing phlyctenular conjunctivitis, accompanied by intense photophobia. After using several of the classical remedies with very slow improvement, recovery was very much hastened by a collyrium of antinosin, 1 per cent. t.i.d.

Case 3.—J. H. D., aged 24 years. Palpebral conjunctivitis. The conjunctiva presents a velvety surface. There is also a blepharitis marginalis. There is a history of inflamed eyes for past five years, during which time medicine had afforded him little relief. A quarter of a diopter of astigmatism in each eye was corrected; the red oxid ointment, and argentum nitrate, 2 per cent. were applied for a month with little improvement. Under the use of antinosin, t.i.d., and massage, the case went on to recovery in a few weeks.

Case 4.—J. R., aged 34 years. History: Eyes have always been weak and inflamed. There is follicular conjunctivitis of the reflex folds and palpebral conjunctivitis, the ocular conjunctiva much injected. Glasses were prescribed, nitrate of silver, 2 per cent., applied on alternate days for one month, and tincture of iodin 1, to 3 per cent. of glycerin proved to be too painful for application to lids. Antinosin, 2 per cent., was applied t.i.d., and massage to lids once a day. In three weeks the eyes had very much improved and much more satisfactorily than under previous treatment.

Case 5.—Mrs. K., aged 71 years, has chronic palpebral conjunctivitis, for which I had previously treated her with the red oxid of mercury ointment and powdered boric acid and massage alternately, with a satisfactory result. A relapse occurred and antinosin, 2 per cent., and massage, were used daily for ten days, and the recovery was more rapid and complete than under previous treatment.

Case 6.—W. C., aged 40 years, complains of inflammation of the eyes for the past two years, which has been particularly troublesome for the past three months. There is palpebral conjunctivitis in both eyes and tarsal tumors of the right upper lid. Treatment: Tumors removed and curetted; antinosin 3 per cent. applied. Repeat antinosin, 1 per cent. t.i.d. After two months' treatment the lids were normal.

Case 7.—Miss S., aged 40 years, seamstress. Eyes have been inflamed off and on for six years past. The bulbar conjunctiva is much injected; chronic palpebral conjunctivitis. Palpebral conjunctiva is very red but smooth. Glasses were prescribed, and antinosin, 3 per cent. In three weeks the lids and eyes were much improved but still inflamed.

Case 8.—K. T., aged 4 years, when two years of age had a left mastoid abscess, for which an operation was performed by a surgeon. During the past week there has been otitis media purulenta of the right ear, and swelling over the left mastoid at the site of the previous operation. The swelling fluctuates on pressure and is exquisitely sensitive. Diagnosis: Mastoid caries and abscess. Incision was made and sequestrum and caries were found in the antrum, which was thoroughly curretted down to the dura. The wound was packed and covered with nosophen gauze, and bandaged. The right ear was treated with hydrogen peroxid and 2 per cent. antinosin and Politzerization daily. In six weeks the discharge had completely ceased in the right ear, and hearing improved from loud voice close to ear, to whisper at twenty feet. The left mastoid completely

healed, and the hearing of left ear improved to ordinary conversation at ten feet. The general health is better than it has been during the past year.

Many other eye and ear cases have been treated with good results, but these few suffice for illustration.

SOCIETY PROCEEDINGS.

Chicago Ophthalmological and Otological Society.

Regular meeting held Dec. 14, 1897, in the Stewart Building.

Dr. MONTGOMERY in the chair.

There were thirty visitors and members in attendance.

The minutes of the previous meeting were approved.

The applications of Drs. J. F. Fulton of St. Paul, Minn., Frank Allport and Wm. L. Ballenger of Chicago, were referred to the Committee on Membership.

On motion of Dr. Starkey, a committee consisting of Drs. Gradle, Starkey and Wilder, was appointed to confer with the editors of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and the *Ophthalmic Record* as to the publication of the minutes.

Dr. STARKEY opened a discussion on the

USE OF X-RAYS IN OPHTHALMOLOGY,

as follows: We all know that certain substances which are transparent, or nearly so, to ordinary light, are opaque to the X-rays, and *per contra* certain substances opaque to ordinary light are more or less transparent to the X-ray. In general, it may be said that the greater the density of the object, the greater its opacity to the X-ray, and it may also be said that the higher the vacuum tube the more transparent are bodies to the X-ray. Starting with this knowledge we can readily see that pieces of metal will cause a denser shade from the X-ray than bones, if a sufficiently high vacuum is used.

As far as I am aware, the case I shall report is the first one ever successfully skiagraphed in Chicago as to the location of a foreign body in the eye. It can be seen that it is necessary in the majority of instances that the skiagraph should be taken from two positions, from the side of the head and from the front, and by means of these two skiagraphs the body can often be definitely located. Dr. Sweet of Philadelphia has invented a plate holder and indicator which I had hoped to show, but am not able to do so. The tube now used is one made by the Queen Company, which overcomes the difficulty of getting a proper vacuum. This tube is arranged with a chemical and a shunt which controls the vacuum.

The first patient is a male 31 years of age, who was struck in the left eye on June 28 with a piece of metal. He was seen the next day, when the lens was found opaque so that nothing could be seen within the eye. The eye quieted down and he was discharged from the hospital, but in August the eye began to soften and it appeared that it was going to be destroyed. On August 20 a skiagraph was taken and it showed definitely that he had a large piece of metal in the eye. An attempt was made to extract the bit of iron with a strong electromagnet, but was unsuccessful, and the eye was removed.

The second case was seen October 28, male, struck in the eye with a piece of metal. A hole in the cornea, and iris and lens opaque. The next morning a skiagraph was taken, which showed the presence of a foreign body in the eye. An unsuccessful attempt was made to remove the steel, although it was only forty-eight hours after the accident. The eye was removed and a piece of steel imbedded in the blood clot, so that a magnet could not affect it much.

Dr. Starkey showed many interesting skiagraphs of the bones of the head and of foreign bodies in different parts of the body.

DISCUSSION.

Dr. CASEY A. WOOD—My experience has been very disappointing with the X-ray. Two or three weeks ago a man appeared in my office with, presumably, a foreign body in his eye, but the patient refused to have a skiagraph taken because he feared untoward results. It certainly looks as if with improved methods and short exposures we may expect some benefit from the use of the X-ray in ophthalmology in the future.

Dr. HALE—My experience, which is limited to one case, has been very disappointing, but I am also inclined to think that it was due to imperfect apparatus.

Dr. STARKEY, in closing, said that the exposure is never longer than eight minutes with the proper vacuum tube.

Dr. K. K. WHEELOCK of Fort Wayne, Ind., read a paper entitled

TROPHO-NEUROTIC KERATITIS.

My attention was first called to this class of cases in March, 1887, when A. F. K., aged 55 years, a farmer by occupation and German by birth, consulted me with an attack of herpes zoster ophthalmicus of the right eye. The following I transcribe from my note book: Large ulcer on cornea at upper, inner segment; excavation shallow. Patient complains of a cold sensation in the eyeball as though the eye were a ball of ice. Anterior chamber one-fourth filled with pus, and iris bound down to capsule of lens leaving pupil the size of a pinhead. Patient a strong, healthy man, but pain had reduced him very much. The most complaint was on account of a sensation of continuous cold in eyeball. Ulcerative area had extended at next visit. The entire cornea is anesthetic. Faradization is used, and the cornea subsequently tested, when the sensibility is found to have returned. At next visit corneal sensation diminished. Faradization again employed. After fourth seance with faradization sensation remained in nearly normal state. Current had been applied from five to seven minutes over closed lids. There seemed to be no difference which pole was applied to neck. When sensation began to return to cornea the ulcer began to diminish in extent and depth. Ulcer did not penetrate into anterior chamber, and got well with an eschar. Three points in this case impressed my mind. 1. The diagnostic significance of corneal sensibility. 2. The value of faradization in such cases as presented subnormal corneal sensation. 3. The pathology of herpes zoster ophthalmicus centering in the Gasserian ganglion. After this I gave much attention to testing corneal sensibility.

In January, 1889, Charles F. K., aged 39 years, German, machinist, was referred to me by Dr. M. F. Porter of Fort Wayne, with the statement that patient had gotten some sand in his right eye while engaged in his work. The notable features were slight lachrymation, very slight photophobia, no pain; simply a sense of irritation. Inspection showed a scarcely perceptible injection at sclerocorneal junction, no foreign body on cornea or conjunctival surface. The upper outer segment of the cornea was roughened as though it had been picked in many places with a minute sharp needle. The statement of the physician that the eye looked as if it had received a "sand blast" could be readily credited, only there was no history of such an accident. I tested the cornea with a spill of cotton, twisted hard, and found the cornea practically insensible over the area of roughening, while over the unaffected five-sixths of the cornea the sensibility was noticeable, but very much reduced, the reflex being lost: T. minus, pupil contracted. Treatment continued about one month. On February 19 notes show that the corneal reflex had returned. T. —2, and the roughened area was smaller in extent and less marked in point of apparent roughness. Treatment had been strychnia, quinin and arsenic and electricity systemically, while locally the usual cleansing solutions were applied. On June 23, 1893, Dr. T. J. Dills, then my partner, enucleated this eye, which is here submitted.

Dec. 4, 1895, Henry L., aged 55 years, farmer by occupation, German, consulted me with the following history: Four weeks before while hauling corn fodder from the field the wind carried something into his left eye. He had some pain at the time, and had to rub the eye and, for further relief, used chamomile poultices, which relieved him of the severe pain. He has suffered from occasional attacks of neuralgia of head for years. The last attack of neuralgia was ushered in by a chill, but he had no return of the chill.

He never suffered from digestive disturbance, but has suffered much from head pain, which always began over left eye. Years ago the pain would last for two or three days, but latterly it would pass off after a sleep of half an hour. Examination showed R. E. S. $^{20}/_{20}$; L. E. S. fingers at four feet, slight injection of sclerotic; cornea rough over outer third and center; reflex abolished as shown by touching with cotton spill; T. minus; cornea looked as though fine sand had been dusted over it. Under strychnia, arsenic and quinin, hot fomentations and boracic acid for a period of ten weeks, he recovered with perfect sight and only a fine nebulous eschar.

February 15, 1897, E. F. C., aged 31 years, electric engineer, consulted me for the purpose of having a foreign body removed from right eye. He had already visited an experienced ophthalmologist, in Pittsburg, who informed him that there was a solution of continuity on the cornea, but no foreign body was present. A drop of cocain was employed and patient went about his work of inspecting some mechanical devices in the city. He did not note the irritation again till next morning, when he arrived at Fort Wayne. He then called at my office. Inspection showed no injection at sclerocorneal junction. Very slight photophobia; pupil contracted; a roughening of epithelium at inner upper quadrant; T. clearly minus 1; no sensa-

tion over roughened area and practical abolition of corneal reflex when tested over remaining clear corneal area. With the glasses which he was wearing: R. E. S. $^{20}/_{40}$; L. E. S. $^{20}/_{15}$. Under treatment with strychnia hypodermically, faradization and hot compresses, he recovered in twelve or thirteen weeks. His functional examination showed R. E. S. $^{20}/_{70}$; + 4 D. $^{20}/_{30}$; L. E. S. $^{20}/_{30}$; + 4 D. $^{20}/_{20}$; hyperphoria 2° which had already been corrected by prisms.

Another case is characteristic of these three and I will omit details.

The second case detailed and the first of trophoneurotic keratitis series passed out of my hands because my acquaintance with the prognosis was not sufficient to establish either a maximum or a minimum time during which treatment must be carried on. The enucleation of the eye by my partner, Dr. T. J. Dills, recalled the history of the case. The series presents the following features common to all: Loss of sensation in area of corneal involvement; subnormal sensibility; not total loss of secretion over area of unaffected cornea and abolition of corneal reflex; tension variable, but always minus; contracted pupil; slight pain, if any; slight irritation and then always as though a foreign body were in the eye; little or no circumcorneal injection. The time over which active therapeutic measures should be employed is ten to fourteen weeks. These cases have all gotten well with good vision and a very slight nebulous eschar.

The name trophoneurotic keratitis is distinctive and should be adopted for the class of cases which I have described, because the name is significant of the organs involved and points to the trophic fibres of the Gasserian ganglion as the seat of lesion. The name "neuroparalytic" should be abandoned, except in cases where gross lesion of the brain is present, or the ganglion is involved *en masse*, or when, in the presence of evident involvement of the trophic fibers, there is also a general lesion of the entire ganglion, as shown by loss of sensation throughout the whole distribution of the fifth nerve. Such a case as referred to in the last division I have seen as a result of periostitis of the petrous portion of the temporal bone and due to inherited syphilis. The case was that of a little girl, 10 years old, in which the trouble was symmetric. But only the right cornea had undergone central ulceration with perforation. In this case so profound was the anesthesia that a tooth had been extracted without pain, and the incident was referred to as indicating great heroism on the part of the little patient. Trophoneurotic keratitis differs in its pathology from keratitis e lagophthalmo in that in the latter condition the lesion of the cornea is the result of exposure from an uncovered cornea together with general loss of resistance on part of all the tissues. In trophoneurotic keratitis the lesion is found under the covered cornea. Snellen's theory of exposure and mechanical irritation is not tenable in this class of cases. We must also differentiate from keratitis malacia. We have all seen cases of hemi-anesthesia of the face in which there has been no desiccation or ulceration of the cornea. I am disposed to think that the sympathetic fibers supplying the Gasserian ganglion play a very important rôle in the nutrition of the cornea. The cases which Noyes refers to as "superficial keratitis" of malarial origin have all the earmarks of the cases which I have described, and he, together with all authors, including Von Graefe, has failed to distinguish between the gross involvement of the ganglion and the involvement of the trophic fibers alone. Von Graefe described those cases but did not recognize the influence of the trophic fibers. De Schweinitz in "Diseases of the Eye," last edition, describes the trophic and neuroparalytic form, and causally groups them under "neuroparalytic" disturbances of the cornea. Fuchs, in his admirable work, refers to the probable trophic origin of certain corneal ulcers. Schmidt Rimpler in his third German edition of "Ophthalmology and Ophthalmoscopy," translated by Roosa, comes very nearly to the exact truth in his opening sentence on the subject of keratitis neuroparalytica. He says: "The form of keratitis which develops in paralysis of the trigeminus may correspond entirely to the neurotic form in its appearance and course." Finally, Meisner and Schiff have shown experimentally that the characteristic inflammation known as keratitis trophoneurotica occurs when the central fibers of the Gasserian ganglion are divided.

In case of paralysis of seventh when the cornea is not covered or even swept except by extreme contraction of superior rectus and inferior oblique we yet have no evidence of desiccation.

DISCUSSION.

Dr. WILDER—I have a case just recovering which has been under treatment for fifteen weeks, a case of obstinate superficial ulceration of the cornea, gradually involving the whole surface. Everything I could think of has been tried, cauterization with nitrate of silver, carbolic acid and galvano-cautery, and the only relief given him was by applying absolute alcohol. This case is probably one such as the author speaks of. Possibly all such cases are in a sense dependent upon some lesion of the trophic centers rather than of the trophic nerves in the Gasserian ganglion. The cause may be malarial poisoning, in which case the ulcers would assume the peculiar dendritic form. All such cases resemble and are often associated with herpetic efflorescences in other places, and should be distinguished from true herpes zoster, which is a more serious affection. A point of interest which the Doctor brings out is the diminution of sensation.

Dr. COLEMAN—I rise to mention one method of treatment to relieve the pain. In two recent cases in which the corneal ulceration was a part of an attack of herpes zoster the intense pain was relieved, but only temporarily, by large doses of chloral, morphin and quinin, but it was permanently relieved by sodium salicylate.

Dr. GRADLE—I wish to call attention to the sharp distinction that there really is between ordinary herpes and herpes zoster. The dendritic form, as mentioned by Dr. Wilder, can begin as corneal herpes, and I have seen two such cases this year. In these cases there is no diminution in sensibility. I have seen two instances of corneal involvement in the course of herpes zoster, but in neither case was the ulceration quite as important as the keratitis, which was diffuse. Many of these cases are followed by very serious consequences. One of my cases was followed by paralysis of the rectus muscle. The question of the influence of trophic nerves on the cornea is open to doubt; in fact, the nerves themselves are not proven, and it is still in doubt whether the keratitis arises from a disturbance of nutrition or from the presence of foreign bodies.

Dr. PINCKARD—The paper reminds me of a case I now have under treatment, which while not neuroparalytic, perhaps resembles such cases in some respects. Some four weeks ago I was called to see a lady about 70 years old who had an herpetic eruption on the outer part of the upper lid. There was marked edema of both lids and conjunctiva, accompanied with redness and considerable pain. Later there appeared herpes on the side of the nose and temple. My fears were for the cornea, which I carefully watched. A curious change took place. The whole corneal surface became hazy, the haze being more marked at the periphery, not in the center. At the same time the cornea became anesthetic. There was and is still some circumcorneal injection, but it is not very great. There has been no pain in the eye, nor has a vesicle formed on the eye. It seems to me that this condition is a true neuropathic keratitis, whether paralytic or not it is hard to say. The herpetic spots on the face have healed, but no change has taken place in the cornea.

HOLOCAIN.

Dr. HOTZ—At our meeting in October I read a brief report of my observations with holocain. Dr. Würdemannn wrote me that his experience had been somewhat different, and suggested that we bring up the matter for discussion at this meeting. At the October meeting I stated that holocain was a very prompt, quick-acting anesthetic, but seemed to me not to penetrate deep enough to make it of value for more extensive and deeper operations, especially one involving the opening of the eyeball. Since that time I have used the remedy considerably and the results are about the same.

Dr. WÜRDEMANN followed Dr. Hotz in the discussion and said: "Würdemann and Black have used holocain successfully in the following cases: Six cataract (simple) extractions, three cataract extractions with iridectomies, three cataract discissions, six iridectomies, eleven tenotomies, three tenotomies with advancement, six canaliculotomies, four chalazia, one sarcoma of conjunctival limbus, one pterygium, one curettement of corneal ulcer, two cauterizations of corneal ulcer, a number of foreign bodies in conjunctiva and cornea, as an instillation before the use of irritating medicines such as silver, bluestone, alum, iodin, etc., and direct application of electrode to corneal and conjunctival surfaces. The anesthetic qualities of holocain equal those of cocain, are no more irritant and excel cocain for operations on the bulb in the following: Its action is quicker and more lasting; it more thoroughly anesthetizes the iris and deeper structures. It more thoroughly anesthetizes inflamed surfaces; the anesthesia may be indefinitely prolonged; the cornea does not desiccate under its use; it does not affect the tension; it does not act on the pupil or accommodation; it does not interfere with the nutrition of the tissues but rather increases their blood supply and hastens healing; its solutions are antiseptic; it is already proportionately cheaper. The only disadvantage in the substitution of holocain for cocain for anesthetic purposes is that bleeding is more free under holocain. Although holocain possesses these

distinct advantages over cocain when applied as a pure anesthetic, it has not and probably will not entirely supersede the older medicament.

Dr. HOTZ—I can not quite understand on what ground Dr. Würdemann claims that the absorption of holocain is better than that of cocain. If I am correct, the absorption is a sort of osmotic process and has nothing to do with the circulation. We know that cocain combined with atropin is often more readily absorbed than atropin alone, so that cocain seems to increase the absorption. The pain from the application of holocain is most intense in a 1 per cent. solution and the after-effects last for hours. One great advantage of the drug is that it will keep and does not undergo any chemic or bacteriologic change.

On motion the Society adjourned. C. P. PINCKARD, Secretary.

Chicago Academy of Medicine.

(*Concluded from page 219.*)

Regular Meeting, Nov. 12, 1897.

A. E. BALDWIN, M.D., in the Chair.

CHOICE OF OPERATION IN AMPUTATIONS AT THE KNEE JOINT.

Dr. J. B. MURPHY—The technique of the operation is not so difficult and requires very much less consideration than the points brought out by the preceding speaker, namely, the position of the scar after the operation, and the ability of the patient to wear with comfort an artificial limb. These are the important facts. Here amputations for the purpose of using the stump for pressure, can be made only where we retain a portion of the leg and knee joint the same as we retain the posterior aspect of the os calcis in operations on the foot, or where we produce talipes equinus in an exaggerated degree by resecting a portion of the foot and producing osteal union between the portion of the foot preserved and the tibia. These points can all give support when pressure is brought upon the stump. Pirogoff's operation is the ideal amputation of this character, as it so arranges the stump as to carry the weight of the body on the dense tissues of the heel. It is well known that when we produce a talipes equinus of extreme degree, the limb is not capable of carrying the weight of the body so well, and the patient subsequently suffers a great deal of discomfort. As to the line of amputation, I have always felt that amputations through the knee joint was much more serious than one above or below the joint; that is, making a knee-joint amputation, retaining the articular surface with or without patella, is a much more serious matter than amputating the leg above the articulation. When it is made above the knee joint I feel that we should select a position where the bone is about the normal size of the shaft of the femur; that is, we should go two and a half inches above the articular surface, so that we remove at the time of the amputation the flanging enlargement of the lower end of the femur. Then we have a stump to which we can attach an artificial limb without any difficulty; the pressure with an artificial limb does not come on the end of the stump but more on the side, except in the cases above mentioned. Now comes the question, how shall we make the line of incision so as to relieve the cicatrix from pressure and irritation? Furthermore, how shall we make the incision in the skin and superficial muscles? How shall we make the incision in the deeper muscles and periosteum? If we make it in the same line, when we have union we will have a scar direct to the bone and the patient will suffer from periosteal irritation. If we amputate the limb through the condyles we can not make a periosteal flap to cover the end of the bone. It is impossible to preserve periosteum in that position; it therefore can not be brought over the flanging end of the bone. In order to cover the end of the bone with periosteum we must remove it above the expanding portion of the femur; one of the desirable methods in amputations in any position where there will be pressure on the end or side is to cover the bone with periosteum. True, when we make an amputation through the condyles and preserve the patella, taking off its articular surface and placing it in a position to secure osteal union between the patella and shaft of the femur, we compensate to a certain extent for the preservation of the periosteum. Now, then, the line of incision must be such that when the tissues are approximated, the scar will occupy the position where there is the least friction and pressure. If we make the amputation in the thigh I am very much in favor of a circular flap. I have always used it, as there is less likelihood of having a continuous cicatricial mass to the periosteum. If we adopt the plan of suturing the subcutaneous tissues, muscles, sheaths, etc., in layers over the end of the stump, the muscles will eventually be absorbed by pressure, but before absorption takes place they prevent adhesion of the superficial scar with the periosteal scar, and in this way allow movable tissue on the end of the stump which is not fastened to the end of the bone.

The method of taking care of blood vessels on account of danger from secondary hemorrhage is one of considerable importance. The experiments of Dr. Senn showed that when we put on a double ligature we had much less likelihood of secondary hemorrhage than from a single ligature. This, I believe, was due to the fact that the upper ligature was not placed as firmly as the lower, and a clot was formed between them. I found in the practical application of that method that it is difficult to say how much pressure we need upon the ligature. If we will change the method of ligation of vessels we can obviate the necessity of a double ligature entirely. When we ligate an artery, draw it down with forceps. Do not ligate an artery on the proximal side of the forceps, but put the forceps high up on the vessel and ligate on its distal side. By ligating in this way we are sure to injure the intima with the forceps. If we injure the intima in the position where the circulation is intact, that is, where there is a continuous circulation of blood, immediately after the injury we have the formation of a clot which fills that portion of the vessel and becomes firmly adherent to the injured intima. This method was deduced and demonstrated in our recent arterial experiments. I have found that we have the safest guard against secondary hemorrhage in an artery that has its intima injured the most on the proximal side of the definite ligature. If we injure its coat by the application of forceps we produce thrombosis. The nerve should be drawn down and divided so that it will not be involved in the scar. I speak now, of course, of the large nerve in that region. By so doing we lessen the liability to neuroma from involvement of the nerves in the scar. If the sheath of the muscle be split and the nerve be inserted into the muscle there is less tendency to neuroma.

We have therefore in the operation itself, 1, the line of incision; 2, the protection of the end of the bone with periosteum to prevent adhesion at the line of incision of the superficial parts to the end of the bone; 3, care of the artery so as to produce injury to its intima and thereby bring about a primary thrombosis after the completion of the operation; 4, care of the nerve, and 5, drainage.

I believe that we have drifted too far from drainage in recent years. Surgeons take a great deal of pride in saying that they have never found it necessary to drain their cases. It is a very nice thing to say. When members of this class find it necessary to drain secondarily, they generally lose the patient. We must always be on the side of caution, and I believe that forty-eight hours drainage does not in the least retard primary union. Drainage for this length of time removes the primary wound secretion which prevents the accurate apposition of living tissues. Primary wound secretion can be nothing less than a detriment to union. Drainage for this length of time brings about accurate apposition. What else? The karyokinetic changes are taking place within a short distance of the cut surface and are preparing for a definite union.

INDICATIONS FOR AMPUTATION ABOUT THE KNEE JOINT.

Dr. ALEX. H. FERGUSON—The indications for operations about the knee joint have changed from time to time as science has advanced. The invention of the tourniquet, the ligation of arteries, the discovery of anesthesia, and the introduction of aseptic and antiseptic surgery have each added to or subtracted from the indications of these operations. There is no subject in the whole range of surgery that has been more talked about, more thrashed out and discussed, than amputations in general by the ablest surgeons of all times. And since the days of antisepsis and exploration of new fields, some physicians imagine that no advance has been made in amputations of extremities in the last twenty-five or thirty years. But such is not the case. One would suppose by this time that all the indications would have been really defined, but we are far from having all of them settled, and we can yet speak with propriety upon the various conditions which demand, and which do not demand, amputation. It varies a great deal with personal experience and with the conscientious ability of the surgeon to know what he can do in certain cases. To lay down a number of absolute indications for amputation at the knee joint would be folly. The indications, however, that are brought prominently before us are those produced by injuries. We may classify these injuries into mechanical, chemical, electrical and thermal. Mechanical injuries are the most common. There is no doubt about the necessity for amputation at the knee joint when the limb is torn away and totally destroyed below the joint, in a railroad accident, by machinery, or by a cannon ball sweeping along and taking it away. The indications in such cases are clear for a speedy amputation in the manner

described this evening. Incised wounds, punctured wounds, lacerated wounds implicating the knee joint itself used to be frequent indications for amputation above the knee joint, not so much on account of the injury *per se*, but owing to the inflammatory conditions which followed, causing a septic arthritis. It was noted by the older surgeons that a large tear into the knee joint was much less dangerous than a small puncture. It is quite clear that a puncture would carry infection, and if not counteracted, eventually an amputation might be necessary. When, however, drainage was free, or the infection slight, a number of cases escaped amputation. All minor injuries, if taken hold of early and properly treated, are now excluded as cases for amputation above the knee joint. When the knee joint is involved we render the part aseptic, use antiseptics, and, if necessary, operate and do away, as much as possible, with the probability of septic inflammation following, but still there are some cases that have been neglected either by the patients themselves, or through an oversight on the part of the practitioner; septic arthritis from apparently minor injuries to the knee joint demands amputation. But not all of them. Even in those septic cases, if we freely open the joint, and, if necessary, lay it completely bare from one side to the other, use antiseptics and establish free drainage, a number of them go on to recovery without requiring amputation. It is a notable experience that excisions at the knee joint for acute septic arthritis are very fatal, and they are practically discarded. If we can not save a joint by free drainage, asepsis and antisepsis, we have to amputate it.

The indication for amputation when a wound is poisoned may come before the surgeon occasionally, as, for instance, when the knee joint of a child is torn by a mad dog. The idea of amputating is the first thing that naturally arises in the surgeon's mind. But I do not put this down as positively a justifiable procedure in the light of our knowledge of hydrophobia and its treatment. The surgeon would be governed by the conditions and circumstances of the case.

Other indications for amputation would be those in which the knee joint is crushed, or the bones below it are so injured as to leave no hope of recovery of its tissues. In these cases amputation or disarticulation should be done. In cases of compound fracture implicating the knee joint, and compound dislocations involving it, it would depend more upon the injury done to the soft structures than the fact of these compound conditions existing as to whether we should resort to amputation or not. A knee joint may be saved although there is a compound comminuted fracture, or a compound dislocation of it, provided the structures in the popliteal space are all right, and sufficient of the soft tissues in front are left healthy and intact to cover in the joint.

I will pass over the chemical injuries to the knee joint and consider the thermal—those of heat and cold. When a limb is hopelessly destroyed by heat below the knee joint, I am rather inclined to do a primary amputation. If the injury is so extensive as to char the limb, there is no doubt but a primary amputation is indicated. We know from our experience with crushing injuries that shock will not often subside until after an amputation has been performed. The shock will not subside, sometimes, in thermal destruction of the limb, until the patient is put profoundly under anodynes. I remember amputating the two legs of a little girl whose feet were badly burned, where the shock did not begin to pass away until after she was put under the influence of an anesthetic.

With regard to cold. You all know that I came from a country where it was cold. I have seen the temperature range from 25 to 45 F. below zero for six weeks at a time. I remember of having as many as a dozen or more cases brought into the hospital suffering from the effects of cold, especially frozen extremities. I believe there is an indication for primary amputation in some of these cases where both feet are frozen up to near the knees, and hopelessly gone from the start. Lives can be saved by doing primary amputation within forty-eight hours in such cases. I know that I have saved the lives of one or two patients by so doing. I have in mind at present a man, shipwrecked on Lake Winnipeg, whose two legs were frozen to a little below the knees. We waited for reaction, which never came; we watched for a line of demarkation, which never took place, and the patient succumbed in spite of all our efforts. We kept the limbs as perfectly aseptic as could be, and still the case went on and developed septicemia, and died in a condition not unlike that found in acute traumatic gangrene. In less extensive gangrene from frost bites the rule is to wait for a line of demarkation.

The electric destruction of limbs needs only to be mentioned as an occasional indication for amputations about the knee joint. There are injuries to the popliteal vessels and nerves which call for amputation. Injury to the popliteal artery or vein is occasionally present in separation of the epiphyses. I have met with two such cases. One case was that of a boy trying to climb into a wagon when suddenly the horse started, his foot slipped between the spokes causing separation of the epiphyses. When I was called to see him soon after the accident the limb was warm, but the artery was completely ruptured and we had to do an amputation the next day. It appears that in nearly all cases of separation of the epiphyses there is more or less injury to the vessels of the popliteal space.

Injuries to the nerves that demand amputation would be usually those of gunshot wounds, where a considerable portion of the nerves posterior to the knee joint would be destroyed. This brings us to the next class of indications, namely, diseases. The first would be inflammations, such as acute septic arthritis, which I have mentioned already. Then comes acute osteomyelitis. In a fracture near the knee joint acute osteomyelitis may start up, streptococcus infection may occur, and this may call for an amputation. Chronic osteomyelitis destroys the bones of the leg and suppuration may be so extensive that an amputation may be indicated in order to prevent general pyemia.

An important indication for amputations about the knee joint was tuberculosis, and for a long time knee-joint amputations were performed in almost all well pronounced cases of tuberculosis of the knee joint. That practice, however, subsided and excision of the knee joint was then introduced. Now we save many cases even from excision. There are certain conditions, however, in which amputation is still in vogue, and will be practiced as long as there is tuberculosis of the knee joint. I refer now to those cases of tuberculosis of the knee joint in which the patient has lung infection as well, where it is important to keep the patient in bed as short a time as possible. If the patient is run down constitutionally we can do quicker work by making an amputation, and can get a patient out of the hospital in two or three weeks thereafter. Amputation at the knee joint is indicated for tuberculosis when the joint is thoroughly destroyed, where the soft structures are all riddled with sinuses, and there is not sufficient bone left behind to make a suitable excision. In tubercular osteomyelitis involving the tibia up to near the knee joint, it is not necessary to amputate up to the line of extension of the disease. The infected part in the center of the bone can be scraped out and amputated at a suitable place.

Aneurysm of the popliteal artery sometimes demand amputation at the knee, those diffuse ones which rapidly spread and occlude the blood vessels so as to endanger the life of the limb below. In chronic aneurysms that extend into the knee joint, and in those not curable by other methods of treatment an amputation is advisable.

Sarcoma is a frequent indication for amputation. If we have sarcoma of the soft parts it may be removed. If it develops on the periosteum itself, and not too extensive, it may be chiseled off. I recall a case of sarcoma that I chiseled from the tibia over a year ago and followed it up with the antitoxin treatment from the streptococcus erysipelatosus and prodigiosus. There has been no return of the disease. Carcinoma is another indication for operation. It arises sometimes in connection with old chronic ulcers. Gangrene is one of the marked indications for amputation at the knee joint, and one of the most prominent indications demanding the operation is a spreading traumatic gangrene. If infection takes place in a severe injury below the knee joint and gangrene climbs up the limb, then amputation or disarticulation must be done at the knee joint, depending upon the condition of the soft structures. Gangrene spreads along the cellular tissues so rapidly that although the skin may look healthy when we cut it, we find we have to go higher. These cases often call for amputation above the knee joint. A good deal, of course, depends upon the time when we get the case and the extent of the gangrene. The symmetrical gangrene of Raynaud demands amputation. Diabetic gangrene is that form which surgeons formerly did not care to touch, but now with our aseptic and antiseptic precautions, in suitable cases we operate, knowing that diabetes *per se* is not the cause of such cases doing badly, but that the wound formerly did not heal on account of infection. We know now that these wounds do heal when suppuration is prevented. The diabetic condition serves as a predisposition for the multiplication of germs in the tissues. We also have senile gangrene to contend with in considering amputations at the knee joint. Amputation may be done at the knee joint in deformities, either congenital or acquired. We may have a tubercular or traumatic condition of the knee joint, which disables a patient for a long time. The limb becomes contracted, ankylosed and fixed in an abnormal position. Amputation may be a blessing in such cases. Congenital defects below the knee joint, in rare instances, call for amputation. In bad stumps due to disease of the bones, chronic ulcers, painful enlargement of the nerves,

etc., an amputation higher up is the only thing to do in order to remove the pathologic conditions and get a good useful limb.

Having spoken of indications, I desire now to say a few words in connection with amputations at the knee joint.

Amputation at the knee joint is a recognized modern surgical procedure on sound surgical basis. We make a distinction between disarticulation at the knee joint, and amputation through or above the condyles of the femur.

History.—Allow me to mention a few historic facts connected with this operation. The earliest notice of it is by Fabritius Hildanus, who performed it in 1581. It was revived by Hoin (1764), after a lapse of 183 years. In spite of strong support by some of the best surgeons of this time it was soon forgotten, and sixty-six years went by until the great surgeon, Velpeau (1830) took it up and made it popular.

In 1824 Dr. Nathan Smith amputated at the knee, and his operation was the first of the kind in America. In this connection he may be characterized as the "Velpeau" of America. Markoe, Pancoast, Brinton and others, also advocated the operation.

British surgeons have been alive to the benefits of amputation at the knee joint; among those giving it distinction were Holmes, Pollock, Cooper, Syme, Carden and still later Fergusson, Lister, Stokes and others. This operation has been practiced more in America than in any other country, and the bilateral method devised by Dr. Stephen Smith will for all time have a useful and permanent place.

Surgical anatomy.—The anatomy of the knee joint is peculiar. Large size, with ligaments, tendons, synovial pouches, bursæ, large surface of articular cartilage, fibro-cartilages and tuberous bony extremities, all are encased in a strong fibrous sheath covered by skin. The quadriceps extensor tendon, the patella and the ligamentum patellæ are in front, each having its surgical bearing. On either side the hamstring tendons which demand our consideration, and behind in the popliteal space are situated the heads of the gastrocnemius, plantaris and popliteus muscles, as well as the vessels and nerves.

A brief consideration of the anatomy will show that the anterior 2 3 of the joint is but poorly supplied with blood vessels, and has no muscular tissue to form a good covering for the large head of the femur.

The tendons extending beyond the joint, to be attached to the tibia and fibula, retract so far when cut that it is difficult to utilize them in the flaps. If the anterior flap is too long its edge will inevitably necrose.

What shall we do with the patella? Should the condyles be cut off? How should the vessels, nerves and tendons be dealt with? What flap or flaps will obtain the safest and best results? These are the questions that surgeons have been trying to solve, and for which purpose many operative procedures have been carried out and recommended.

Operations.—Disarticulation may be diverse. 1, disarticulation by a short anterior and a long posterior flap (Hoin); 2, by a long anterior flap (Pollock); 3, by a long circular incision (Velpeau); 4, by an elliptical incision (Bauden); 5, by a modified circular (Chalot); 6, by lateral flaps (Stephen Smith).

Indeed these are not all the methods devised for disarticulation at the knee joint. Pancoast successfully made use of three flaps from the upper part of the leg. Which of these to select in a given case will depend largely upon the indications for the operation. If the case was one of injury below the knee, demanding disarticulation, the condition of the patient as well as that of the limb is to be taken into consideration. When shock is profound and continuous, as in a crushing injury, the life of the patient demands our first attention, and to save it rapid work must be executed. Dr. Stephen Smith's (1870) bilateral amputation can be done as quickly as any of the above six methods, and the stump is, I think, the best.

The recommendation of Dr. Brinton in 1872, to sever the semilunar fibro-cartilages from the tibia and leave them in the stump is a decided advantage. His own words are: "By thus leaving them in position I have a cap fitted upon the end of the femur which preserves all the fascial relations, eventually prevents retraction and guards against the projection of the condyles." The patella is of course left undisturbed, and it adds strength to the stump by preserving the integrity of the quadriceps extensor. The ligamentum patellæ should be cut close to its insertion. I am in the habit of cutting the hamstring tendons lower than the joint line and fastening them to the stump with catgut, in order to prevent their retraction and preserve their function. When a new and suitable insertion is given to these tendons, the strength and all the movements of the thigh are preserved, the stump can be as forciby adducted, abducted, flexed, extended and circumducted as if no amputation had been performed. None of the authorities, and I must say none of the operators as far as I know, pay any attention to the above-mentioned treatment of the tendons of the muscles.

This simple procedure of giving insertions to severed tendons is especially suitable in amputation about the hands and feet. The vessels are ligatured always with catgut. If silk is used, history almost surely repeats itself, and one silk ligature after the other comes away by a process of suppuration. A vast amount of suffering, inconvenience, and more or less damage to the stump (making it tender), are prevented by absolutely discarding the use of silk in all amputations of the extremities.

The nerves must be cut shorter than the structures, and if of considerable size as here, it is possibly better to remove a wedge-shaped piece from the end of each, as recommended by Senn and coapting the two little flaps with fine catgut. The object is to remove the cut nerves away from the scar and end of the stump, thus lessening the tendency to the formation of neuromata and painful stumps.

Disarticulation by Stephen Smith's method has many features to commend it. An excellent covering for the femur; efficient drainage; well nourished flaps; scar between and behind the condyles, and a stump, powerful and serviceable are obtained. I fully agree with Roswell Park in calling it "The method of election." The tissues may be injured in such a manner as to make it impossible to form lateral flaps, then the surgeon will of course make his flap or flaps from healthy tissues. It is gratifying to know that one long posterior flap may be all sufficient, or the circular or modified circular is all right.

Two even, or uneven flaps, from any side of the knee may be chosen in emergency.

In selecting a disarticulation the joint must be healthy, free from infection, disease or extensive injury; the surrounding skin and structures must be healthy to afford ample flaps. In disarticulations as compared with amputations of the femur, shock is much less and the rate of mortality is very much lower. Aseptic and antiseptic surgical precautions have done a great deal for this operation. According to Legouest the mortality of disarticulation at the knee joint was 87 per cent., and of amputation of the thigh 74 per cent. during pre-antiseptic times; while now, according to Erdman (1895), the mortality of disarticulation is only 13 per cent., and of thigh amputation 21.5 per cent.

Septic infection of the synovial membrane, cartilages and bursæ, made the operation of disarticulation at the knee in former times simply a fearful one; hence the recommendation of amputation above the condyles by the older surgeons.

I am well aware that the surgeon who looks mainly to prosthesis would abandon the operation of disarticulation altogether, but he who pays attention to the principles of exæresis will stoutly uphold it.

Amputation through the condyles.—1. Transcondyloid (Carden's, 1846) (*a*) Lister's modification (1883), (Gross, 1866). 2. Gritti's osteoplastic operation (1857). 3. Stokes' supracondyloid modification of Gritti's (1886). 4. Sabanejeff's (of Odessa 1890) osteoplastic flap amputation.

Carden's operation consists of a long anterior skin flap, the length of the diameter, at the point of osseous section, and the dividing of everything else straight down to the bone, which is sawn through slightly above the plane of the muscles. Lister and Gross made a short posterior flap of skin, but otherwise the operation is just the same as Carden's. All the muscular and fibrous structures are sacrificed and the bone simply covered by skin.

I do not perform, as a matter of choice, any amputation which sacrifices all the muscular, tendinous and fibrous structures.

In Carden's amputation, the anterior flap is liable to die, the stump is easily injured and can not bear much weight on its end, and the whole stump is weak, because the muscles are allowed to retract, thus greatly losing their function.

In the light of our present knowledge of amputations and stumps, I can not understand why Carden's operation should be performed at all; it is much better to make the anterior flap a little shorter, and the posterior one longer; to preserve the quadriceps tendon to cover the bone, enucleate the patella if diseased, and if not saw a slice off it and leave the posterior muscular and tendinous structures sufficiently long to enable you to suture them to the deep fibrous structures of the anterior flap, when brought over to the end of the bone. In this manner, an ideal stump is the result. It is beautiful in shape, will bear the weight of the body on its end and is powerful in all its movements. By this means skin is sutured to skin, fascia to fascia, tendons secured in the stump, and all forming one uniform covering for the end of the bone.

When the operation is done for tubercular disease, all the synovial membrane should be dissected out. It is to be remembered that the condyles must be sawn through on a level with their terminations, and not at a right angle with shaft of the

bone. If a child or youth is the subject under treatment, the epiphyseal line should be respected, and not encroached upon, if possible, under 18 or 20 years of age. Efficient drainage is obtained by means of a few strands of silkworm gut. Gritti's operation is a good substitute for Stephen Smith's disarticulation, when the patient is in excellent condition constitutionally and when it is not necessary to make a speedy operation. It takes more time to saw, fit and suture the patella and femur together than to do a disarticulation. This is also true of Stokes' and Sabanejeff's operations. Not infrequently you begin with the intention of performing Gritti's; but the patella can not sometimes be brought over the end of the bone until slice after slice is removed, and the operation is completed as a Stokes' modification. Gritti's and Stokes' operations are especially suited for tuberculosis of the end of the femur, where an excision is not advisable. I have no experience with Sabanejeff's osteoplastic operation; it appears to be an operation that will be suitable in exceptional cases.

When a section of the anterior surface of the tibia, including the tubercle with its attached patellar tendon, is removed, as in this procedure, more healthy tissue is required below the knee than in all the preceding operations, which may be an objection to it.

TREATMENT OF PATELLA.

Dr. CARL BECK—I shall have to make a few remarks only in regard to the treatment of the patella, as so much has been said by Drs. Cuthbertson and Murphy. There is one point to be considered in connection with the treatment of the patella, namely, the pathologic condition for which we operate. If we have a trauma to deal with, conservatism prompts us to leave everything possible. We leave the semilunar cartilages and the patella, if they are not crushed, if possible, in order to give the stump greater mobility and prevent retraction of the muscles. In those cases where the disease has invaded the knee joint and amputation is necessary, usually the patella is diseased also, and is not to be left. In most of the cases of Gritti's or of Stokes' operation the bone itself may be so thin by osteoporosis, that agglutination and further on adherence and callus of the bone is almost impossible. This applies particularly to tuberculosis. When tuberculosis develops near the knee joint, osteal atrophy extends a considerable distance up from the joint, and the healing of such osteoporotic bones is not liable to occur. Therefore, in most cases in which I have seen Gritti's operation performed by Gussenbauer, a secondary amputation has been made later on account of a badly healed tubercular stump.

The Stokes operation is not so important for our discussion, for the reason that support in our time is not on the stump but on the pelvis, and the stump itself rests only in an artificial limb and is not very much pressed upon. So much for the treatment of the patella.

I wish to say a few words now with regard to the treatment of the nerve. In order to prevent neuralgia and the formation of amputation neuroma, it has occurred to me that it would be necessary not only to draw the nerve down, but to make a plastic operation on the nerve; that is, split the nerve, remove half of it, fold it over, etc. I have done this in two cases a short time ago. I am not able to give you the results just now. I intend to make experiments along this line to demonstrate the healing of the nerve, making a plastic operation on the nerve and reflecting it upon itself. It seems to me, this will prevent the formation of amputation neuroma. The neuromata are very painful. I have excised a number of them. I have seen Dr. Ferguson excise these bulb-like growths. I believe drawing down the nerve is of great value, but inasmuch as the nerve ends remain there by their own tendency to grow, they develop often, even if not enclosed in connective tissue, into bulb like growths, and this of itself may cause neuralgia. I have not had a chance to observe the cases for a long time, but I will report my experiments later in a special paper.

FORENSIC RELATIONS OF AMPUTATIONS AT THE KNEE JOINT.

Dr. HAROLD N. MOYER—So far as the consequences of amputations are concerned, litigation might arise on account of bad stumps. These are by no means infrequent, and so far as their application to the knee joint is concerned, I do not think they are any different from amputations made in other parts of the body. There is one special form of disarticulation at the knee joint which calls for some consideration on account of its medico-legal relations, namely, cases of children before the bone has reached its full growth. I have seen a number of such cases, which have been litigated in our courts in various ways, and one of them is so interesting a type, that I will briefly relate it.

A case that has recently come under my observation is instructive as to the possible complications that may arise from a bad stump in children. Bryant in his excellent work says that conical or sugar-loaf stump is a natural consequence in children, that growth continues in the bone with greater rapidity than in the soft parts, and the end of the bone is thrust against the cicatrix in the flap and eventually adherence with painful conical stump is the result.

If this fact be lost sight of, it may lead to a suit for malpractice, as friends and relatives are quick to assume that a defective stump is evidence of the carelessness or incompetence of the surgeon who performed the amputation. A lad, 11 years of age, was brought to me for examination whose leg had been amputated four years before for a crushing injury, made by the wheel of a street car. The stump was in very bad shape, nothing covering the projecting end of the femur for two inches but thin and ill nourished skin; the cicatrix at the end of the bone had ulcerated. The stump was the seat of constant neuralgic pains, spasms, and was exceedingly sensitive to changes in temperature and the slightest mechanical irritation. My opinion was that a reamputation would be necessary, preferably through the shaft of the bone above the epiphyseal cartilage to prevent the recurrence of a bad stump. The injury was the subject of a suit of law, and the attorney for the plaintiff was anxious to show the painful and bad condition of the stump and the risk of reamputation as an additional element in damages. The amputation had been made by the railroad surgeon, and in the opinion of the family was improperly done. I was able to assure them that the bad stump was probably due to natural causes, for which the surgeon was in no way responsible, and that they were as clearly entitled to recover for a bad result from natural causes growing out of the injury as they would be if negligence were alleged.

A subsequent conversation with the surgeon showed that the limb was practically amputated at the knee by the injury, and that he simply severed some of the soft parts, shaped the flaps and dissected out the patella; he was deterred from making a section of the femur because of the collapsed condition of the patient and the fear that additional interference would result fatally.

The case is one of interest because of its bearings in malpractice suits and its general relations to amputions. It also emphasizes the fact that in the thigh amputations of children the section should be made above the epiphyseal cartilage, otherwise a bad stump inevitably results.

This is a type of a number of cases seen in which bad results have followed disarticulation at the knee in children. So far as the forensic aspects are concerned, the section ought always to be made above the epiphyseal cartilage. Another possible relation which has not been referred to, and which may have its forensic importance, is the amputation of legs that are paralyzed. I refer now to those flail-like legs that result from injury to the anterior horns of the spinal cord, in which there is complete motor paralysis of the legs, with atrophy of the muscles and of the bones, and failure of growth. Such limbs dangle about; their nutrition is low; they are exceedingly liable to injury because of inability to control them, and in many instances the patients themselves request amputation, or it is suggested by the physician in charge. I do not think with our present knowledge that these amputations are justifiable, particularly if there is sufficient power in the muscles which unite the pelvis to the thigh, the gluteal and psoas, to balance the leg upon the thigh. In these cases a resection of the joint should be made instead of an amputation, making the leg one piece from the hip to the foot.

SELECTIONS.

A Coroner's Perquisite.—The London *Lancet*, October 2, points out the absurdity of one of the fictions upon which the profits of coroners depend in England. In some parts of our own country a like superstition survives. "A very old and very persistent superstition has again dictated the action, or rather the inaction, displayed by the persons who first discover the body of a recent suicide. A poor fellow, named Henry Scott, recently committed suicide in a Suffolk village by hanging himself to a tree. It was stated at the inquest that an hour before he was cut down a man saw him suspended from a branch, but that instead of ascertaining whether life was extinct he went for the police, being under the impression that a body must not be touched save in the presence of the police. Some children also saw the unfortunate man and ran to tell their elders. But their elders did nothing, being under the

same curious impression. It can not be too widely known that the prejudice against touching a body save in the presence of the police is founded upon nonsense, and nonsense to which before now lives may have been sacrificed. The fault probably lies at the door of the police who, in cases where a body has been moved and a verdict has been subsequently returned against some persons unknown, have been known to hint that if things had not been disturbed they could have obtained a clue, the sort of clue, we suppose, the absence of which accounts for the unsuccessful inquiries into the death of Miss Camp. The duty of a person who finds a body is first to ascertain that it is a body and that of a fellow creature. If life remains a medical man should be sent for and afterward the police. If it is necessary to remove the body to ascertain that it is a body (this would always be the case when dealing with death by hanging) it will be well to take accurate notes of the position in which it was found for the information of justice." We may learn from the above and other observations by our candid medicolegal experts that, barring necessary expense, the normal rate of income of an ordinary or inexpert or political coroner should not exceed $2,000. This rule will properly apply to localities where violent deaths are comparatively rare, namely, in our less populous localities. In more crowded situations a more liberal tariff must have sway. As a general rule, $5,000 per year is believed to be about all that a conscientious coroner may expect to claim after his legitimate expenses have been paid. Some coroners of cities of the larger size are said to be in the receipt of over $15,000 per annum, and yet find that amount insufficient to meet the total expense account, but some of this outgo must be regarded as intercurrent, non-legitimate or possibly political in its nature. One thing is very certain with regard to politicians who get elected to coronorial berths, however large their revenues may be, they find it difficult to "lay up a cent."

Soil Bacteriology and Water-Supplies.—Mr. Hunter, a Scottish analyst, in the *Sanitary Journal*, repudiates the idea that the day of chemistry has passed in the sanitation of our water-supplies. He likewise repudiates the assertion that chemistry and bacteriology tend to produce contradictory and confusing results. He says: "The production of carbonic acid in fertile soils is part of the life work of those important soil organisms with which every fertile soil is teeming, and the removal of this carbonic acid is the principal function of the field drain. In sterilized soil there is practically no solvent action results from dain with its .02 per cent. of carbonic acid in solution. Moreover, we many years ago proved that groups of our soil organisms possessed the power of decomposing stable double silicates, and we are therefore compelled to conclude that the salts dissolved in the river, well and drain water were due purely to the wondrous works of those living micro-bodies in the soil, and certainly not to purely chemic interchanges such as are, with such simplicity and accuracy, painted in books. From what has been said, you will have gathered that the composition of waters is very largely due to life in the soil; and it follows that the composition of waters may be materially altered by: 1, inoculation of soils or gathering ground with advantageous organisms, if necessary; and 2, by altering the compositions of the soil, so that the multiplication and working of those advantageous organisms may be encouraged.

"In recent years some medical officers, who have not yet learned the rudiments of bacteriology, have not hesitated to say that the chemic examination of waters is positively useless, and nothing but a biologic examination will satisfy them. I am quite as alive to the value of a biologic examination of water as any medical officer in Scotland can be, but I can only understand their criticisms by realizing that some of them have got hold of a word they do not understand, *bacteriology*, and that they are ringing the changes upon the public and their employers, the County Councils. It is now many years since, in conjunction with my worthy and able friend, Dr. T. G. Nasmyth, undertaking the bacteriologic part; and it is simply a fact that, we arranged to independently examine waters biologically and chemically, Dr. Nasmyth in every case, there was no single exception, the two methods agreed. More recently, Professor Bowhill of San Francisco, who is probably one of the very best practical bacteriologists of the present day, whose recent contribution to the bacteriology of water is the most masterly piece of work in this department that has ever been done, has had a similar experience. He has exchanged many samples with the State chemist, and in every case, good or bad, the biologic results have absolutely confirmed the chemic. These critics suggest that it is possible for a water to be bacteriologically bad, and that the badness will not be revealed by purely chemic analysis; but what they suggest is most impractical and well-nigh impossible of happening, unless some skilled bacteriologist were to grow pure cultures, say of typhoid bacillus, and introduce those into a water-supply, minus the medium in which they were grown. That, I take, however, to be impossible; but even were it not so, the presence of typhoid bacilli in such a case would be by intention, and the work of a demon. If the chemic examination of waters is worthless, it is more than time we had a new public health act, because at the present moment, as the law stands, if any question arises as to the quality of a water 'it shall be submitted to the official analyst for chemic examination;' not to the analyst or the medical officer of health for bacteriologic examination, but to the chemist for chemic examination. What, then, I maintain is that while we do not, and dare not, overlook the importance of the biologic examination of waters, the wholesale condemnation of the chemic examination is, to say the least of it, rash, and is attempted only by men who, in my opinion, are absolutely incompetent to judge either of the one method or the other."

Innominate Aneurysm Treated by Electrolysis; Recovery, Subsequent Necropsy.—In the *British Medical Journal*, Dr. Stewart of Philadelphia reports an important autopsy made on a recovered case of innominate aneurysm treated by the introduction of gold wire and by electrolysis. The autopsy took place about three and one-half years after a complete cure of a very large aneurysm. Ten feet of snarled, coiled fine gold wire were used in the case. The case was unfortunate in that the man was an alcoholic and syphilitic, and the subject of pronounced aortic and mitral disease, with extensive cardiac enlargement, generalized endarteritis and chronic nephritis. The aneurysm formed a large and prominent swelling at the roof of the neck. It was regarded as springing from and being limited to the innominate artery. The sac wall was of extreme thinness and, at least externally, was unprotected by clot. This, which was apparent to the eye and touch, was further demonstrated by puncture with needles. At the time of operation the sac wall seemed on the point of bursting externally in several situations over which the skin was extremely thin and bluish. The result of electrolysis through the introduced wire was very decided. Clot formation, leading apparently to solidification of the sac, was early manifest. The patient lived for nearly three years and a half after the operation, and finally died as the result of the formation of a large thrombus in the middle cerebral artery, the result of the advanced endarteritis present. Despite the most unfavorable condition of the patient, his bad cardiac and renal disease and generalized arterial sclerosis, his having had syphilis and being a steady drinker of spirits, the result obtained speaks strikingly in favor of this procedure as a method of treating sacculated aneurysm. The sac was found to be of extreme hardness, with complete consolidation and obliteration of its cavity. At the autopsy, which was performed four hours after death, the heart was found to be dilated and hypertrophied, the aortic and mitral valves sclerosed and insufficient, and there was a

distinct fusiform aneurysm at the junction of the transverse and descending portions of the aorta, which throughout was the seat of extensive atheromatous degeneration. The sacculated aneurysm springs directly from the root of the innominate artery. The aneurysmal sac is approximately the size of a fetal head at term, length thirteen centimeters, transverse diameter nine centimeters. The sac is completely consolidated with organized coagula, in which lie the coils of wire. The consolidated sac has at its base a small cul-de-sac, the remains of the innominate artery. This, from the aorta, admits the little finger to a distance of four centimeters through the annular ring, sharply defined, two centimeters in diameter. The cul-de-sac was noted to contain in its interior a small coagulum, presumably of postmortem formation. The sac itself was very firm and wholly solidified, and when cut into was found to be completely occupied by organized material, in the interstices of which lay the coils of fine gold wire. Brain: A large thrombus is evident in the left middle cerebral artery. Softening has occurred in the region of the corpus callosum, caudate and lenticular nucleus and in the internal capsule of the left side. This cerebral thrombosis was evidently the cause of death. He has now treated two cases of sacculated aneurysm by the employment of electrolysis through introduced wire, and has directed the technique in a third successful case. This has naturally led him to give a good deal of attention to the subject. The result in his second successful case, the necropsy of which is here reported, and that obtained in the case treated by Dr. Hershey of Colorado, in which the solidification of the aneurysm resulted by this method, is sufficiently suggestive to engage the attention of the therapeutist. The method of treating aneurysm by the introduction of wire was first introduced by Moore at the Middlesex Hospital, in 1864. His case died of sepsis. Stewart thinks that in this case a great excess of wire was introduced. The cases of Loreta and Moore (both abdominal aneurysms), in which six feet and four to five feet of wire were respectively introduced, both resulted in cure. Stewart employs under strict antiseptic precautions fine silver or gold coiled wire, which, after the introduction of a moderate amount, will assume snarled spiral coils which will reach the whole caliber of the sac. Failures have occurred through the use of wire which was too stiff or too bulky; and steel or iron wire will decompose and fill the sac with a granular detritus which may be the cause of emboli. Galvanism with a rather strong current, 40 to 80 milliamperes, Stewart considers a very important part of the treatment, for, although the presence of the wire itself may be sufficient to obstruct the blood stream sufficiently to cause thrombosis, the passage of the galvanic current through the cells is observed to cause much more rapid and firm solidification.

Perforating Ulcer of the Foot; Operation; Recovery.—Dr. Cazenavette, in the *New Orleans Medical and Surgical Journal*, November, reports a case of the above named affection as follows:

On July 17, 1896, S. W., a negro 29 years old, was admitted to Ward 1, Charity Hospital; formerly brakeman of freight trains, now barber; single; good ancestral and personal histories. In 1888 he received a gunshot wound in the back. A 38-caliber ball entered on a level with the eleventh rib, one and one-half inches from the median line. He fell, and on attempting to rise realized that he had completely lost control of the lower limbs. The next day he was taken to the hospital. Complete paraplegia of the lower extremities was marked; paralysis of the bladder necessitating catheterization soon became apparent. Acute symptoms of cystitis were early manifested. The patient suffered agony for a week and had high fever. The penis became very much inflamed, edematous, the meatus everted and a membranous structure was extruded. This was secured, extracted and found to be a complete membranous cast of the bladder, with the opening that of the urethra. A few months later the patient left the hospital, slight paralysis of the right leg remaining.

In 1892, four years after his spinal injury, while working on a freight train, fearing a collison, he jumped to the ground and pierced his right heel with a spike; according to his statement it entered fully an inch. A few days afterward he applied for treatment at the out-clinic of the Charity Hospital. Irregularity of attendance and neglect resulted in a local ulcer. The inconvenience of this ulcer rather than pain decided him to abandon his occupation and go to the hospital. Just after his admission he was smitten with the smallpox and sent to the pest house, where he finally recovered. As only the history of traumatism was given the ulcer was treated as a simple traumatic one. Thorough antisepsis and asepsis, with rest, were the features of the treatment. The ulcer did not improve. It increased in depth rather than in surface. This argued that the true cause had not been determined, for such an ulcer, due solely to bacterial contamination (no diathesis nor dyscrasia present) treated as it had been with antiseptic care and rest in the recumbent position, would have healed in a short space of time. The ulcer of five years standing was situated on the right plantar surface, its posterior margin being about an inch from the end of the heel. It was irregular, circular and about an inch and a half in diameter. Its surface was sunken beneath its borders which, thickened and indurated, overhung the surface of the ulcer, causing it to appear smaller than it was in reality; callosity was a prominent feature. As previously stated, insensibility was marked all over the plantar surface of the foot. The diagnosis of trophic ulcer was made.

Dr. Matas, surgeon in charge, decided to try total extirpation with the view of reaching healthy tissue, to be immediately covered with Wolfe's grafts. The area of operation was duly prepared.

On January 15, two months after the operation, there remained two uncovered areas of granulations, each scarcely exceeding a quarter of an inch in diameter. On January 27, it was thought advisable to cover these granulating surfaces with grafts like the preceding, after the same preliminaries. On account of the impairment of sensation on the right thigh, the grafts were again taken from the left. The surfaces to be grafted after denudation were triangular in shape, with their apices in the center of the old ulcer, extending to the bone, and measured about five-eighths of an inch at the bases. Six days later the wound was dressed. The epidermis on one graft had begun to peel and both grafts were adherent. At the following dressing the epidermis on the other graft had peeled off and the whole seemed to be doing well.

At my last visit to the patient, on February 20, three weeks after the second operation, the healing process had progressed uninterruptedly, with the exception of the apex of one graft, upon which there appeared a granulating surface not exceeding a quarter of an inch in diameter. As those granulations and the surrounding tissues are healthy we are justified in assuming that this small area will reach the stage of epidermization without obstacle.

Perforating ulcers have been looked upon by the profession at large as almost incurable. When they are due to a progressive trophic lesion of the spinal cord their cure is apparently beyond our reach, but when caused by a non-progressive lesion, as we have in this case, the surgeon should supply general surgical principles which serve in the treatment of other rebellious forms of ulceration, viz., a total and complete extirpation of the diseased area, including the osseous as well as the soft parts; this is a matter of fundamental importance; the substitution of the excised part by large cutaneous grafts involving the whole thickness of the skin, as suggested by Wolfe and amplified by Krausse, by which the denuded surface is immediately protected and the weakened part reinforced by the addition of new and vigorous material, endowed with all the attributes of living and resisting protoplasm.

The Father of English Surgery.—John Ardene, a contemporary of Chaucer, Wycliffe, Froissart, Petrarch and Guy de Chauliac, belongs to a period of extreme interest in the evolution of general and surgical literature, and it will be seen that he within his sphere gave no mean aid toward the advance of a higher culture. Of biographic facts we have but little to record, but it is known that he was born in 1307 and practiced at Newark in Nottingham from 1349, the year of the plague, until 1370, when, at the age of 63 years, he settled in London. Thenceforth he appears to have devoted his days to the publication of his experiences, in the form of treatises upon medicine and surgery. It is surmised that he had been previously attached for a time to the English forces during the French wars in the capacity of field surgeon, for there is no doubt that he was well acquainted with France and its language, and that he had an extensive experience in the treatment of wounds; but although he calls himself *chirurgus inter medicos* there is nothing to show that he had possessed a Master's degree or any formal license for the exercise of his calling. However, this may be, his writings prove that he was a man of clerkly attainments, with a good knowledge of Latin and French, and well-read in the available literature of his profession, quoting freely from the works of the medieval surgeons, the Arabs, and even from the Greeks. That he achieved fame as a surgeon is no less certain. He refers with pardonable pride to a number of distinguished patients whom his ministrations had restored to health, and he is said to have received from the Black Prince, a grant of land in Connaught, and with it the right to prefix the noble particle "de" to his name. It is hard to say whether the position of an Irish landlord was more enviable then than now, but the colossal fees he was able to command from his wealthy clients probably rendered him independent of his Hibernian rentals. In his case, as in that of Guy de Chauliac, the literary labors which have preserved his memory were the outcome, and not the cause of his success, for it was not until he had won an honorable repose that he found leisure to give the world the secrets of his practice. His writings, couched in fair Latin and dealing with nearly the whole of medicine and surgery as they were then known, were noteworthy productions of a reactionary but still illiterate age, and they appear to have been duly valued during the next three centuries, although none received the honors of the press except an abstract translation of an essay on fistula, which was printed in 1588 by John Read, as an appendix to a translation of Franciscus Arceus on wounds. When Ardene was in his prime there was but one scientific center in Europe where any pretense of surgical teaching was maintained. The once famous school of Salerno had already become effete. The Italian revival under William of Saliceto, Theodoric, Lanfrank, Modini and others, had given place to the old stagnation against which Bologna had made a valiant fight before sinking into premature decay. Paris, too, after listening to the teaching of Lanfrank and of Henri de Mondeville, had absolutely turned her face to the wall, and Montpellier alone, thanks in part to its geographic position, which brought it within nearer touch of Arab learning, was liberal enough to sanction the cultivation of anatomic and surgical science, not, indeed, within the walls of its university, but in extramural classes, in which, among others, Guy de Chauliac, the greatest surgical figure of the age, took a leading part. Even this tolerance soon died out, and Montpellier went the way of Salerno, Bologna and Paris, but not until the work of Guy de Chauliac and John Ardene was ended. In England the age of Chaucer and Wycliffe made no provision whatever for medical progress, and there was no school of anatomy or surgery throughout the land, and no English contributors to the literature of the subjects could be said to exist, if we except such theoretic references as may be found in the works of Gilbertus Anglicanus and John of Gaddesden, written, like all medical treatises of the time, in Latin. It is true that the writings of the Arab physicians, which gave an imperfect sketch of Greek surgery, and those of William of Saliceto, Roger, Theodoric, the Four Masters, Lanfrank, de Mondeville and, after 1363, the masterpiece of compilation, the Chirurgia Magna of Guy de Chauliac, were also procurable in Latin guise, but the knowledge to profit by them was rare indeed in the ranks from which the representatives of English surgery were drawn. In the fourteenth century the lot of those of our countrymen who fell in need of our surgical ministrations was a sadly precarious one. The art was regarded by the educated physicians then, and for centuries later, as beneath their dignity. As expressed by our Elizabethan surgeon, John Read, in the doggerel which he and his fellows loved to prefix and append to their professional writings:

"Chirurgery moreover is
Abhorred of the Phisition,
Who doth esteeme it as a thing
To vile for his profession."

His writings convey a vivid picture of the man. It is easy to see him as the leech of courtly and obliging manners, sober in attire, and moderate in speech, and endowed with a self-restraint born of self-respect, with a tact that bore him well through the many difficulties that must have beset the thorny path of the *chirurgeon* in his day, and with a strong common sense that never rose too near the dangerous level of genius; a goodly man and true, kindly and honest, but shrewd withal, with a quick eye to the main chance and a capacity for raising expediency to the dignity of principle. He was through all a surgeon, a scholar and a gentleman, and in the records he bequeathed he stands before us as one whom we, his professional descendants, may accept with pride and veneration as the Father of English Surgery.—London *Lancet*.

First Complete Excision of the Stomach in a Human Being. Dr. Carl Schlatter, in the *Medical Record* of Dec. 25, 1897, describes the case as follows: The personal observation forming the subject of this paper, relates to a woman 56 years old. In her case I completely excised the stomach, even beyond its cardiac extremity, and then restored the continuity of the alimentary canal by stitching a loop of small intestine into the lower end of the esophagus, *i. e.*, esophago-enterostomy. I first saw the patient at the surgical polyclinic on Aug. 26, 1897. An inspection of the abdomen revealed a marked bulging between the left hypochondriac region and the umbilicus. The abdominal parietes were flabby, and palpation easily revealed an oval mass of hard consistency in the region of the stomach. The tumor was freely movable. Its size was about that of two fists. Very marked emaciation was found. The patient was unable to retain any kind of nourishment. She clamored for relief by surgical interference. She was admitted to my wards for further careful observation. I did not feel confident that gastrectomy, or even gastro-enterostomy, could be successfully performed, on account of the large size of the tumor. The patient continued to reject almost everything, including fluids. The iodid reaction of her saliva (after exhibition of iodid of potassium) required forty-seven minutes for its first appearance. The chemic examination of her gastric secretion showed no trace of free hydrochloric acid. . . .
On Sept. 6, 1897, acting for Professor Krönlein, I performed laparotomy under morphin-ether anesthesia, and with strict antisepsis, incision in the median line, extending from the ensiform process to the umbilicus. As I had anticipated, the entire stomach presented itself in the shape of a hard mass extending from the cardiac to the pyloric extremity. Strangely enough, the tumor was freely movable. It was readily lifted out of the peritoneal cavity. Three rather soft lymph nodes were found at the greater curvature near the pylorus. The stomach being diseased *in toto*, a gastro-enterostomy was impossible. I at once decided to attempt to excise the entire organ, or take recourse in a jejunostomy. I first freed the stomach

from all its attachments at the greater and lesser curvature, having previously shut off the general cavity of the peritoneum by sterilized compresses. The omentum was incised between Péan's forceps. Silk sutures were used. The stomach was then forcibly dragged downward so as to enable me to reach the esophagus. The left lobe of the liver had to be constantly held upward by an assistant, in order to permit me freely to manipulate within the field of operation. In this way I finally succeeded in securing the esophagus rather high up, by means of a Wölfler clamp. A Stillé forceps was next fastened closely to the cardiac end of the tumor. Then the stomach was severed directly beneath the esophageal extremity. As the esophageal incision appeared somewhat oblique, I proceeded to place a small occluding suture at the gastric wound. The same steps were now repeated at the pyloric end of the stomach. I next mobilized the duodenum as far as possible toward the head of the pancreas. Then having applied a duodenal compressor, and likewise a tumor clamp, I removed the entire stomach between the two points of compression. I also dissected out the lymphatic nodes above mentioned. The patent lumen of the duodenum was treated, like the esophageal opening, with iodoform gauze. The broad bridge joining together different divisions of the alimentary canal had now been entirely removed. I next tried to pull the duodenal opening upward toward the esophageal cleft. It was only with considerable difficulty that the two could be made to touch. It was manifestly impossible to join them by direct suture. I therefore invaginated the duodenal rim and closed the opening by a double suture. I then searched for a suitable coil of small intestine. Beginning at the duodeno-jejunal fold, I followed down the intestine for about fifteen inches. The presenting knuckle of intestine I grasped, and pulling it over the transverse colon, I placed it against the esophageal slit. A piece of this intestine, about five inches in length, was secured between two Wölfler clamps. By means of sutures not going deeper than the serous coat, the intestine was then attached to the esophageal stump. A longitudinal slit about one inch in length was then made into the bowel. Then the mucous membrane of the esophageal end was firmly united with the intestinal mucous membrane by a continuous circular suture. The material employed was silk. Above this a second suture, extending through the muscular and serous coats, was introduced. A Lembert suture finally completed the stitching, which now seemed to hold. The esophageal and duodenal clamps were then removed, the former having remained in position for over two hours. On dropping back the organs into the abdominal cavity, the sutured portions showed marked retraction upward toward the esophageal part of the diaphragm. The abdominal wound was closed in the ordinary way by silk ligatures. Less than eight ounces of ether had been employed during the narcosis, which had fortunately been a very quiet one. Pulse after the operation 96 a minute, steady and of fair volume. There had been a very slight loss of blood during the course of the operation, which, however, had lasted nearly two hours and a half. There was a steadily progressive increase in the weight of the patient after removal of the cancerous stomach.

. . . There being no food receptacle after ablation of the stomach, it became obligatory to feed my patient at first with minute quantities of food, given at short intervals. The results of this method of procedure were in all respects happy ones. Quantities of food approaching ten ounces seemed to excite vomiting. So, too, cold fluids resulted in diarrheal discharges, and may have been partly responsible for the rise in temperature, observed for some little time after the operation. Keeping in mind the absence of mechanical function, the patient's dietary was at first a strictly fluid one. But as early as the second week after removal of the stomach, semi solid and even solid food was allowed. It was retained and digested without discomfort The patient having only a single tooth, mastication was of course quite imperfect, otherwise it seems to me possible that an ordinary mixed diet might have succeeded at a still earlier date. Some weeks after the operation the patient's ordinary daily dietary was as follows: At regular intervals of from two to three hours she took milk, eggs, thin gruel or pap, tea, meat, rolls, butter and Malaga wine. The daily quantity amounted to one quart of milk, two eggs, two to three ounces of pap or gruel, seven ounces of meat, seven ounces of oatmeal or barley water (as thick almost as gruel), one cup of tea, two rolls and half an ounce of butter. Personally I felt most concerned about the obliteration of all chemic activity on the part of the absent stomach. I soon perceived that adding pepsin and hydrochloric acid to the food was theoretically as inadmissible as it had been found practically valueless. The alkaline fluids of the intestine at once neutralized the acid and rendered the pepsin inert. Fortunately it soon became apparent that despite the absence of acid pepsin, proteids were readily assimilated in the intestinal tract. . . . Products of abnormal intestinal fermentation or decomposition (skatoxyl and indoxyl) were either not at all found, or else discovered only in traces. . . . The patient objected to swallowing charcoal. Huckleberries were at three different times found in the passages, twenty-four hours after having been swallowed. Apart from a daily recurring diminution in the quantity of excreted chlorids, the urine of this woman has remained normal since ablation of her stomach. The daily excretion of chlorid of sodium has been found to vary between the limits of 0.6 per cent. and 0.95 per cent. It should be stated in this connection, however, that, complying with the wish of the patient, her food is prepared with less salt than that of the other ward patients. The stools were well formed, of normal consistency, and light yellow in color. The microscope showed large numbers of fat globules and fatty crystals, some undigested vegetable fibers, but no undigested animal fibers or connective tissue. Large quantities of triple phosphates were observed. The number of micro-organisms was normal. Altogether repeated examinations revealed no noteworthy departure from a condition of perfect health. No matter what theoretic physiologic notions we may have imbibed from lectures and textbooks, the woman under observation had repeated attacks of ordinary nausea, retching and vomiting. We must needs conclude, therefore, that the rôle of the stomach (*i. e.*, its antiperistaltic efficacy) in this direction has been very much overrated. While the vomited substances showed an acid reaction, this was not due to the presence of free hydrochloric acid. In view of the fact that the patient ejected as much as thirty ounces at one time, it seems reasonable to suppose that the remaining portion of the duodenum may have already begun to show distention sufficient to produce a sort of compensatory receptacle for food, perhaps nature's attempt in the direction of the new formation of a stomach. In endeavoring to explain vomiting without a stomach, we should remember that the act itself is far from being a simple process. It is due to nervous action on a complex motor apparatus, consisting of pharynx, esophagus, stomach, diaphragm, and abdominal muscles. It is not surprising, therefore, to have witnessed in this woman an ordinary attack of bilious vomiting, superinduced by a mere psychic disturbance.—*Abstract.*

How the Surgeon Lost His Fee.—A famous Vienna surgeon was asked, by telegraph, how much he would charge for a capital operation on Reb Chaim Rosenbaum, a young, promising merchant in darkest Polish-Russia. The reply was that 5,000 gulden ($2,000) would be a fair compensation for the job. After various negotiations it was agreed that the desired amount should be paid after the operation was performed. The surgeon left sunny Vienna at once to emerge, after a thirty-six hours' journey, in the garlicky atmosphere of a small Polish town. There he was met by a congregation of long-bearded and long-coated individuals with long faces, who explained that the life-saving professor was too late this time and that good Reb Chaim Rosenbaum was gathered to his fathers the previous night. The surgeon's disappointment was so much greater as the mourning survivors did not show any willingness to pay his expenses. He concluded, however, to take a day off in the town. The population heard of the presence of the celebrated surgeon and it was not long before he saw himself surrounded by a crowd of surgical cases. He was kept busy operating the whole day, receiving fees of 50 to 100 gulden from each patient, so that, while not getting the stipulated 5,000, his trip was not a dead loss. When on the following day he was entering his train to return to Vienna an old Polish gentleman most politely approached the professor, wishing him a lot of good things, praising his skill and many virtues, and finally saying that the whole town was forever under deep obligation to him, and to show his everlasting gratitude he would confide a secret to him. The professor could do no better than to listen and great was his surprise when he heard the following confession: "Don't you know,

dear professor, that there is some mistake about Reb Chaim Rosenbaum's premature end and that in fact he found it preferable to stay with us instead of being gathered to his fathers. Among the many patients you operated upon yesterday you also operated upon Reb Chaim Rosenbaum, and God bless you, you were satisfied to take 50 gulden instead of 5,000. Thanks to Heaven and to the greatest of the great professors, he is on the road to recovery. Great is your kindness and great is Allah!" The professor made an unsuccessful effort to smile, the locomotive began to puff, and when next he goes to Rosenbaum's town, without a payment in advance, may we be there to see.—*Clinical Recorder.*

PRACTICAL NOTES.

Combination of Iodid and Thyroid Treatment of congestion of the thyroid gland. Halipré advises combining these two treatments as indicated in acute cases of congestion and hypertrophy. He reports a case cured by the combination, rebellious to either alone.—*Semaine Méd.*, December 22.

Can Liquids Injected into the Gums Find Their Way into the Bones?—Dzierzawski replies in the affirmative as he found that a solution of methylen blue injected into the interdental papillæ found its way into the upper jawbone as far as the antrum of Highmore. The lower jaw was only colored by it in the close neighborhood of the injection.—*Cbl. f. Chir.*, November 13.

Purulent Peritonitis in Pregnancy.—Fabricius reports a case operated on, releasing a large quantity of fetid pus, but the uncontrollable vomiting that followed made abortion necessary. The patient recovered rapidly. When laparotomy was performed the diagnosis was still uncertain, but temporizing would have proved certainly fatal.—*Gaz. d. Osp. e d. Clin.*, December 9.

Gelatin Vaginal Tampons.—J. Fischer presented some convenient tampons at a recent meeting of the Vienna Medical Club. The cotton impregnated with the desired substance is inserted in a gelatin shell provided with a cover opening inward. The patient can easily introduce the shell herself. The gelatin melts in twenty minutes, and the cotton wad is removed the next day by means of a string attached to it.—*Therap. Woch.*, December 5.

Revulsion and Infective Processes.—V. Martini reports the results of an extensive series of experiments to determine the effect of revulsive medication on the infective processes beneath. He states that they are absolutely ineffectual; the subjacent infective process and the superficial pursue their respective course without the slightest reciprocal effect. Useless in all, they may prove distinctly injurious in some cases.—*Gaz. d. Osp. e d. Clin.*, December 9.

Decomposition of the Blood by Chloroform.—Desgrès and Nicloux state that chloroform in contact with potassium or any alkaline disengages oxid of carbon. Experimental investigation showed that the alkaline blood affected inhaled chloroform in the same way, one subject having 1 to 1000 of oxid of carbon to 5 kilograms of blood, total weight 65 kilograms. While this proportion is not very large, still it may explain some of the accidents due to chloroform.—*Presse Méd.*, December 11.

Therapeutic Ferments; Beer Yeast in Diabetes.—The diet can be varied in diabetes if two or three tablespoonfuls of beer yeast are taken during the day at meals, disguised in beer or white wine. It promotes assimilation and destroys the sugar derived from the food, while preventing the accidents that follow an exclusive meat diet., It is especially useful in cases in which the sugar is chiefly derived from the food, but is beneficial in all. It should be discontinued for a few days from time to time, or less taken every three or four days.—*Gaz. Méd. de Liège*, December 23.

Treatment of Pott's Disease with Sublimate.—Capparoni has succeeded in gradually improving and curing the paralysis and pain in three cases of Pott's disease, two cervical and one dorsal, by a daily subcutaneous injection of 10 centigrams of sublimate. None were syphilitic. In two months the first case was able to walk. She returned to the hospital two years later with paralysis of the members; a second course soon restored her. She had borne two children in the interval.—*Semaine Méd.*, December 22.

Substitution of Sea Water for Saline Solution in Hypodermic Injections.—Hallion recommends diluted sea water for this purpose, as it is better supported and can be administered in larger amounts and much more rapidly. It is infinitely less toxic than the solutions of sea salt usually injected. Another point is that sea water lowers the temperature while salt solution raises it. The density of the urine is less with the former, indicating better functions of the kidney.—*Semaine Med.*, December 8.

Prevention of Pitting in Variola.—Satisfactory results are reported by several practitioners with Finsen's method of keeping the patient the entire period of the disease in a room illuminated only with red light, like a photographer's dark chamber (*Presse Méd.*, December 22). Kolbassenko recommends the following salve for dressing the eruptions: Ichthyol, 19 grams; almond oil, 60 grams; lanolin, 20 grams. Apply externally three times a day until the scabs fall.—*Gaz. Méd. de Liège*, December 23.

Orthoform in Hypodermic Injections for Surgical Anesthesia.—Hirschbruch states that orthoform will produce a lasting local anesthesia sufficient for minor surgery, while the non-toxicity is a great advantage. He first injects into the skin a small amount of a 2 per cent. solution of cocain (about 2 milligrams of the salt) and then injects in this spot in several points 1 c.c. of distilled water containing 3 per cent. orthoform in solution, shaking the syringe well at each injection, as the orthoform does not dissolve but is merely held in suspension.—*Semaine Méd.*, December 22.

Anti-Diphtheria Serum in Asthma.—Proceeding from the fact that anti-diphtheria serum causes the pseudomembrane to be thrown off by means of an exomosis from within outward. Professor Revilliod of Geneva, has tried it in several severe cases of asthma, which he has cured after they had resisted all other remedies for years. Improvement was noticeable after the first injection in the first case, increasing with each one until the recovery was complete in five months with ten injections. The second case was cured in ten days with three injections. The third with six injections in two months.—*Therap. Woch.*, December 5.

Fluoroscopy of Pleuritic Effusions.—Bergonié and Carrière report that the fluoroscope shows the displacement of the liquid as the patient assumes various positions, and with the motions of the diaphragm. Purulent effusions seem less opaque than the serous. But its principal value consists in the information derived in regard to the condition of the lungs above the effusion. It completes Grancher's schemas, reveals bacillary lesions and has a great prognostic value. In one case the clinical data were at fault owing to adhesions, which prevented the "sou" sound considered by Pitres pathognomonic.—*Semaine Méd.*, December 15.

Continuous Suture in Two Layers.—Mikhailoff obtains remarkable solidity with his suture described and illustrated in the *Presse Méd.* of December 8. It resembles the sewing machine stitch, which consists of a series of loops over a second thread. The thread is passed through the top of the wound. A loop on one end is drawn through the tissues, forming a double thread in them. Two loop stitches are taken in this way, when the ends are crossed and a second row of two loops applied, or the ends can be crossed between each stitch. The strength of the double thread inside the tissues and crossed threads out-

side, especially adapt this suture to wounds or autoplastic operations in which there is a large loss of substance.

Severe Hemorrhage after Extirpation of Neoplasms Controlled by Cocain.—Grazzi removed a large pediculized papilloma from the larynx of a woman who shortly before passed through an attack of influenza. The patient was seized with violent coughing and blood-spitting, which the usual remedies failed to control. After two hours of vain attempts he finally swabbed the larynx with a 20 per cent. solution of cocain, which stopped both the coughing and the hemorrhage for a while. The cocain had to be applied three times before all hemorrhage ceased. He reports another case of the ablation of a simple polyp of the nose after an attack of influenza, likewise followed by excessive hemorrhage.—*Semaine Méd.*, December 22.

Electricity in Elephantiasis.—The conditions peculiar to early childhood render the action of electricity especially beneficial in lymphangitis, and Moncorvo reports "magnificent" results attained with the faradic and galvanic currents. Treated in the initial period of its development, the formation is arrested and in many instances subsides completely. In more advanced cases the morbid tissue is transformed more or less rapidly. Elastic compression and hydrotherapy were combined with the electricity. *O Brazil Medico* of October 8 and 15, contain his communication in full, accompanied by several illustrations of remarkable manifestations of the disease in early childhood. One infant, well developed otherwise, looks as if his foot had been inserted in an enormous watermelon. In another, congenital, the disease assumed the fibrous and cystic form.

Naphthalan for Skin Therapy.—A series of observations has been made in Professor Finger's out-patient department, by Dr. Pezzoli, on a new preparation named naphthalan which appears to combine the therapeutic properties of tar with those of naphtha. It is a dark-brown unctuous substance with scarcely any smell and a melting point of about 70 degrees C. When used as an ointment it leaves no stain on the patient's linen, after it has been washed. It is very useful in various forms of eczema, sycosis and common psoriasis, as well as in parasitic affections, such as ringworm and scabies. It should be used with a certain degree of caution, as if rubbed in too energetically it is liable to produce some folliculitis of the same nature as tar acne. It was tried in forty-two cases of eczema and appeared to be of value in all stages, which renders it a very convenient preparation for general or out-patient practice. Excellent results were obtained in all the fifteen cases of impetigo contagiosa in which it was prescribed. In scabies three applications were found be sufficient.

Alcohol Vapor Compresses.—E. Heuss has revived the old practice of applying alcohol to wounds, studying the *modus operandi* and finding that the beneficial results are due to the vapors of the alcohol penetrating the tissue. He promotes this by applying the alcohol on a six to eight folded mull compress, dipped in 95 to 96 per cent. alcohol, squeezed till it no longer drips with moderate pressure. Over this a broad layer of dry surgical cotton, one or two fingers thick, is laid, and a soft air-tight covering renders the whole impermeable. The first dressing is renewed in twelve hours; less frequently afterward. A thin layer of dry xeroform gauze is applied under the alcohol, on open ulcerating wounds. His communication to the Moscow Congress is published in the *Therap. Woch.* of November 28, with instances of the remarkably favorable results attained with the vapor compresses, especially in sycosis, furunculosis, carbuncles, gonorrheal epididymitis, etc., and also in aborting phlegmons and mastitis. They were equally successful with infected wounds.

Abortive Treatment of Endometritis with the Vapors of Bromin.—Nitot remarks that the true prophylaxis of parenchymatous metritis and chronic salpingitis consists in curing recent endometritis while the inflammation is still superficial, with some substance that will penetrate to the remotest crevices in the uterus, and even into the tubes, extremely antiseptic, diffusible and endowed with anticatarrhal properties sufficient to modify without injuring the tissues. Bromin, which is soluble in water and disengages dense vapors at the ordinary temperature, is endowed with all these properties. A bottle with a double current sound attached is filled with a saturated aqueous solution of bromin; air is forced into the bottle by a bulb entering the bottom. The results attained with this simple treatment have been extremely satisfactory, as the healing vapors reach every point of the surface with sufficient force, and none of the disadvantages of a liquid.—*Journ. de Méd. de Paris*, November 28.

The Subcutaneous Injection of Quinin.—As quinin does not dissolve readily in water (1 to 800 aq.), the discovery that antipyrin rendered it much more soluble led to the combination of the two for subcutaneous injections. Laveran's formula is: Quinin hydrochlor.; 3.0; antipyrin, 2.0; aq. dest., 6.0. With this mixture Blum secured remarkably favorable results in a severe epidemic of malaria in Algiers. The strange fact that a neutral quinin salt in a 50 per cent. solution failed to produce the slightest pain, induced Professor Santesson of Stockholm to investigate whether a new chemic substance had not been formed out of the combination, which he found to be the case, and named the compound quinopyrin. It is much less toxic than quinin, and the pain of an injection is no more than from salt solution. Quinopyrin (quinin 0.5 to antipyrin 0.33), reduced the temperature of a non-febrile rabbit 1.5 to 2 degrees. An injection of quinin 1.0 with antipyrin 0.66 produced merely a slight intoxication, temperature and pulse scarcely affected. The same quantity administered per os produced marked quinin intoxication and lowered the temperature 1 degree.—*Deut. Med. Woch.*, No. 36.

Crossed Adductor Jerk.—In a recent number of the *Journal of Physiology*, Dr. Purves Stewart has a short paper dealing with this subject. The peculiarity of a crossed jerk is one which is not infrequently observed, and essentially consists in movement of the opposite leg when an attempt is made in the ordinary way to elicit the knee-jerk on one side. In Dr. Stewart's case, if the right patellar tendon was tapped, two jerks occurred, one of the right quadriceps extensor, the other of the left adductor muscles, and conversely of the right adductor muscles and the left quadriceps extensor when the left patellar tendon was tapped. The jerks of the two legs appeared to occur simultaneously, but an apparatus was devised to show: 1. The moment at which the patellar was tapped. 2. The moment at which the knee-jerk occurred. 3. The moment at which the crossed adductor jerk took place. The instrument is described in the paper, and three photographs are also reproduced of successful tracings taken during the experiments. These show clearly that the crossed adductor jerk occurs at an interval distinctly later than the knee-jerk, the average delay between the occurrence of the knee-jerk and the crossed adductor jerk in the three experiments being 0.057 of a second. This interval is considerably shorter than Dr. Glynn found in a case of crossed vastus internus jerk. Dr. Stewart mentions that different opinions have been held as to the nature of the crossed jerk, some observers considering that it is a true reflex, others that it is a direct muscular jerk produced by a sudden stretching of the adductor muscles resulting from the "jar" to the pelvis caused by the tap on the patellar tendon; others also hold that the adductor jerk is due to a sudden mechanical shock to the spinal cord. Dr. Stewart is induced, by a consideration of the results of his experiments, to conclude that the crossed adductor jerk is not the result of direct stretching of the adductor muscles by a shock communicated from the pelvis or due to a shock transmitted mechanically to the spinal cord, but is a true reflex occurring at a period distinctly later than the ordinary knee-jerk. The considerations which have chiefly led him to reject the two former views are that a tap on any of the bones near the knee, although equally likely to "jar" the pelvis, did not produce the jerk, and that only one adductor jerk was produced, and not one on the same side as well. He finds that the average time necessary for the appearance of the crossed adductor jerk is about 0.126 of a second from the time at which the opposite patellar tendon is tapped.

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SATURDAY, JANUARY 29, 1898.

SHENCK'S THEORY OF SEX DETERMINATION.

An eminent Vienna embryologist, now somewhat on in years, recently advanced what he considers strong evidence for a theory of sex determination in a communication to a Vienna medical society. This communication has not only been commended by Austrian and British medical journals, but has been widely and sensationally exploited in the lay press. Practically the position of Dr. SHENCK is that held by some obstetricians since the days when mother-right passed to father-right inaugurating the "couvade" by which after delivery the father must go to bed while the recently delivered wife arises to

"Serve rich possets to her husband in the straw."

SHENCK'S theory of sex determination is essentially that of SHAKESPEARE'S day advanced by Falstaff (HENRY IV, Act IV, Scene III) in answer to the reproaches of Prince John.

"I would you had but the wit; 'twere better than your dukedom. Good faith, this same young sober-blooded boy doth not love me; nor a man can not make him laugh; but that's no marvel, he drinks no wine. There's never any of these demure boys came to any proof; for thin drink doth so over-cool their blood, and making many fish-meals, that they fall into a kind of male green-sickness; and then when they marry they get wenches; they are generally fools and cowards."

This theory, which SHENCK claims to have demonstrated by the scientifically auspicious method of experiments on himself and wife without control experiments, is particularly an admixture of three older hypotheses: That paternal superiority determines the superior male sex. That paternal nutrition aids in determining this superiority, and finally that while the mother is of an inferior sex her good nutrition aids in determining the superior male offspring. All these theories more or less commingled have been advanced, as THOMSON and GEDDES have shown ("Evolution of Sex"), for centuries. They had a divine source according to MOYES, the paranoiac leader of the Oneida community. His claim (despite the large number of male hebephreniacs in insane hospitals among children of that community) was later supported by statistics ignoring these lunatics, collected (HOLBROOK'S "Stirpiculture") by a Miss MCGEE of the community.

As most stress has been laid by SHENCK (like many preceding students of sex determination) on nutrition of the parents, the question arises does nutrition influence sex? If (as asserted by obstetricians biased by ante-embryology theories) sex be predetermined from the outset of ovum development, then this influence must at once be rejected. Hypotheses like these, advanced ere the days of VON BAER, must at once be tossed into the lumber-room of disproved theories. The modern position as regards the existence of sex in the ovum is that of LAULANIE, who has shown that in birds and mammals, three stages can be distinguished.

1. Germiparity, which is a return to that phase of lower cell development when reproduction was a function of all cells; a function which persists in the embryonic cancer cell to the destruction of the organism. 2. Hermaphrodism, where both sexes are evident. 3. Differentiated unisexuality.

BLAND SUTTON, PLOSS and others are of opinion from careful research that in individual development embryonic hermaphrodism prevails, but that one set of elements predominates over the other in the establishment of the normal unisexual state.

GEDDES and THOMSON point out that ("Evolution of Sex"):

The higher the organism is in evolution the earlier is its sexual fate determined. Only in the lower vertebrates (lamprey, lancelet, etc.), semivertebrates (sea-squint) and invertebrates, does prolonged neutrality of sex, or prolonged embryonic hermaphrodism usually occur.

There are then periods when nutrition may affect sex, strengthening the tendency from germiparity to embryonic hermaphrodism and from this to differentiated unisexuality. It is, however, evident that determination of the influence of nutrition on sex development in the higher vertebrates is difficult, since by HERBERT SPENCER'S law of individuation unisexuality has early a preponderance.

As to the lower vertebrates DRUSING has (*Internl. Centralblt. f. die Harn. und Sex., Org.* B. ii.) shown that:

Sex is not inherited, but the result of various factors, acting not only at the time of impregnation, but at various times thereafter. Long after impregnation, when the embryo is already developed, nutrition is still influential, and may change the tendency even after the sexual organs have developed. Poor maternal nutrition may arrest female development and cause reversion to the male type.

The experiments of HENSON (which supplement and extend those of THURY) show that:

A very favorable condition of both ovum and sperm will lead to the formation of a female.

These results are however diametrically opposed to those of SHENCK and his numerous precursors since the days of ARISTOTLE. That both maternal and paternal nutrition have an effect is however demonstrable. Even that embittered doctrinaire opponent of the inheritance of acquired characters, WEISSMANN, admits that:

> The origin of a variation is equally independent of selection and amphimixis, and is due to the constant occurrence of slight inequalities of nutrition in the germ-plasm.

That, however, the influence of maternal nutrition is most potent has been shown by repeated biologic experiments as well as in studies of degeneracy. The unimpregnated queen bee, or the unfed (with queen food) fertile worker bee as a rule, with rare exceptions, produce only drones. Feed the worker bee (which is an undeveloped female) like the queen and she becomes a queen capable of producing queen and worker bees on impregnation. The phthisic mother usually produces males. This fact was pointed out by that eminent American clinician DEWEES, nearly seven decades ago ("Practice of Physic," Vol. ii), and has been before and since observed in connection with tuberculosis and other factors producing degeneracy. If maternal nutrition be thus potent in producing females (a wealth of evidence in this direction is cited by THOMSON, GEDDES, MAUPAS, DRUSING and others), then not only is the Shenckian hypothesis unfounded, but an inferior result (the female) is obtained. The biologist, unbiased by oriental Semitic tendencies, like those of Dr. SHENCK anent the natural inferiority of woman, is naturally led to enquire whether the female from the standpoint of reproduction be really the inferior sex. SPITZKA, the leading American pupil of SHENCK, to whom the latter admits his indebtedness (SHENCK'S "Embryologie," 1884), points out (*American Journal of Neurology and Psychiatry*, Vol. ii, p. 740) that:

> The development of the female genital organs is a higher grade than that of the male. At the early periods of embryonic life there is but one development regarding sex, and that is male. It is at this period of life that causes operate either to retain the original development or to impress on such a further development into the female.

A casual glance at illustrations of the embryonic development of the reproductive organs in that popular text-book, GRAY'S "Anatomy," sustains SPITZKA'S position. The male organ remains unchanged from a type found in even invertebrates, while the female gains with increased complexity. Zoologists rank animals in evolution by female characteristics. The mammals are an excellent illustration of this principle. The inferior races of man differ less from the higher by their brain than by their pelvis. The female pelvis of the lower races, as HAVELOCK ELLIS has shown ("Man and Woman"), is masculine in type, while the male pelvis of the higher races is feminine. To a lesser degree (excluding hydrocephalic male skulls, like that of CUVIER) this is also true of the skull. The female of mammals has under her care for life, that essential germ of the child, the ovum. The impregnated ovum for months is fed through her blood. She nurses the child for months after birth. Compared with this, the father's part in reproduction is slight. That the ovum is the essential germ of the child is shown by the existence of parthenogenesis (virgin generation). As SPITZKA remarks (*Medicine*, November, 1896):

> The ovum possesses an inherent activity independently of fructification. How far this may extend in the direction of more mature development is shown by what is known as parthenogenesis, or virgin generation. This is the development of living beings without a father. Bees, some butterflies, ants and wasps notoriously multiply their kind without sexual congress. As a rule the parthenogenetic offspring are themselves incapable of further procreating their kind. But to this there are remarkable exceptions. The aphides multiply for many generations without the entervention of a male. Weigenbergh has shown that the silk-moth can be propagated as long as the male element is permitted to act at every fourth generation. The *Artemia salina*, a minute crustacean living in saline springs, reproduces its kind for years without a male being present, males being produced at definite intervals only (von Siebold). Among the vertebrata, parthenogenetic development has also been observed, though rarely reaching maturity. Thus, segmentation occurs in unfertilized ova of the chicken (Oellacher), of the fish (Burnett and Agassiz), and of frogs (Moquia Tanden). I have seen a blastoderm form in unfertilized ova of the toad fish (*Batrachus tau*). Henson isolated the oviducts of a rabbit, thus rendering the admission of semen impossible, while the ova, discharged at heat, were compelled to remain in these oviducts. Three years later he killed the animal and found that the ova had developed into twisted, club-shaped, hollow sacs. The development in the female ovary of dermoid cysts (containing bones recognizable as maxillaries with teeth, hair, and skin, rudimentary intestinal, glandular, and cerebral traces), even in undoubted virgins, proves that even the human ovum is capable of parthenogenetic development. While such development, so far as known to science, is always abortive, and while, as Washington Irving remarks, the ingenious maiden who today would attribute conception to any other cause than sexual congress would find it difficult to overcome the prejudice of scientists, yet embryology, while declaring immaculate generation improbable, does not pronounce it impossible. A worker bee is a highly organized creature with a well developed brain, wonderful sense organs, intricate muscular apparatus, yet it may be an offspring of an unimpregnated queen bee. What is a regular occurrence in one class of animals is sometimes observed as an exceptional one in another class. If the startling and apparently miraculous nature of a virgin generation of a living child be regarded as the sole objection to receiving such a fact, its defender might urge that the virgin generation of dermoid cyst with all the traces, however aborted, of vertebrate organization, is only a shade less startling and miraculous.

SHENCK has adduced no new evidence in favor of his old Aristotelian hypothesis. So far all the evidence at hand tends to show that while sex can be influenced by maternal nutrition and less directly by paternal, the female sex is most likely to be produced under favorable conditions. This is fortunate for man's future. Upon the perfection of the female, from a reproductive standpoint, turns future advance of the human race, since only through further development of the female pelvic organs and pelvis can the gains of the race be transmitted. Fortunately, enthusiastic oöphorectomists are rendering sterile no small number of female neurotics, thus lending potent assistance to the survival of the fittest pelvic organs. This beneficent result is not fully appreciated by those who decry such philanthropic labors. Discussion of the Shenckian hypothesis casts a decidedly optimistic light upon the labors of these painstaking gentlemen, since

imperfect female organs (the result of deficient maternal nutrition *à la bee*) are relieved from a task for which they were unfitted, to the benefit of the race, of the public charitable and correctional institutions, of the owner of the organs, and last, but not least, to the financial benefit of the enthusiastic oöphorectomist.

THE ABUSE OF SO-CALLED NERVE TONICS.

Many men and women in and out of the medical profession are resorting more and more to the employment of drugs which have, what has been falsely called, a tonic influence over the nervous system, since they find that the employment of such substances relieves them of symptoms arising from nervous exhaustion and enabled them to go on with their work for a time, in a manner which would otherwise be impossible. At one period the employment of nervous stimulants, other than tea, coffee and alcohol, was confined almost entirely to those of the medical profession who ignored the fact that drugs used for stimulant purposes produce ruin in the end.

Unfortunately for the laity of today a large number of semi-medical purveyors, finding the demand for their products not sufficiently great, have resorted to means by which they call the attention to the fact that remedies can be obtained which will be capable, in the language of a recent writer, of producing "a condition of veritable beatitude both mental and physical, so that the mind expresses itself in incoherent flights of the imagination." As a result of this a large number of individuals who have no reason to doubt the plausible advertisements which they read, resort to preparations of morphin, kola and coca, which they take to excess and unconsciously drift into a state which is practically equivalent to the morphin and cocain habit. Even if these drugs are not employed as the stimulant ingredients of such mixtures, unprincipled vendors so fortify innocent and mild nervous stimulants with large quantities of alcohol that the patient unwittingly becomes a slave to this intoxicant though under the impression that he is ingesting a practically harmless drug.

Some interesting statistics, recently published in *Health*, show that such habits are most prevalent in Germany, France and the United States, although they have victims in Russia, Sweden, Turkey and the Far East. The medical profession supplies 40 per cent. of the male morphinists, which is the largest proportion; after which follow men of leisure, 15 per cent.; merchants 80 per cent.; while peasants, clergymen and politicians occupy the lowest positions numerically on the list. Among the females addicted to the habit, the largest number, 13 per cent., are women of means, and these are followed in number by the wives of medical men, who make up 10 per cent. of the list.

Very recently our attention has been forcibly called to these facts by an instance which not only emphasizes these dangers but illustrates how careful a physician should be when prescribing stimulant remedies not to give the name of the preparation to the patient, or if he does so, on the prescription blank to direct the druggist not to renew the prescription without his orders. A woman, who by many years of correct living enjoyed the full confidence of her friends, was during a short convalescence directed by her physician to take a preparation of coca wine which had been very largely advertised not only to the medical profession but to the laity under a name which in no way indicates that it contains so powerful a drug as coca. Not feeling fully recovered when the first bottle of it had been consumed, the patient obtained another, and soon finding herself dependent upon it continued to purchase bottle after bottle until at the end of a year she had become a typic coca habitué. Not until she had been using the preparation for nearly nine months was her continuous use of it discovered and, when it was too late, she learned from her friends that the pleasant tasting wine which possessed these extraordinary powers, depended for its chief physiologic effects upon a drug which did not appear in its name.

So, too, at a recent meeting of the British Balneological Society, SNOW drew particular attention to a form of intemperance rising from the too free administration of coca wines to invalids, whereby they obtained a strong alcoholic beverage laden, more or less, with the still more powerful stimulant coca, and it was pointed out that many women who are not above the deliberate use of such stimulants, have not the bravery to ask for alcohol or cocain in the drug store and yet do not hesitate to purchase a coca wine, or preparation of kola, under some name which does not convey, at least to their minds, the possibility of developing a habit.

There is no drug yet discovered, unless it be alcohol, which adds materially to the force of the body, and physicians can do no more goodly service to their patients than by impressing upon them this fact.

At the present time journals devoted to the subject of athletics contain, in their advertising pages, statements in regard to the action of kola and coca which are absolutely unjustifiable, and pictures are published in these advertisements which give the impression that by the use of these drugs puny men and boys may become possessed of Herculean strength. All of these remedies simply call into activity the reserve forces of the human economy and place the reserve fund of the prodigal youth at his disposal to be spent after his ordinary strength is exhausted. In a greater or less time such an individual will find that his reserve fund has disappeared and that he is a bankrupt in physical energy. It is enough that the physician must by every means in his power combat the exces-

sive use of alcohol and morphin. It is little less than a crime that greedy manufacturers should purvey to ignorant persons remedies which are capable not only of doing harm by expending the individual's strength, but which also tend to develop in him habits which sap his mental and moral development and render him a slave to the use of stimulants, and this being the case let us discourage those manufacturers and vendors who advertise such products to the laity.

PREDISPOSING INFLUENCES IN THE DEVELOPMENT OF TYPHOID FEVER.

Although we have very definite information in regard to the micro-organism which produces typhoid fever and of the fact, which has been proved beyond all doubt, that the most common means by which it gains access to the body is in food and drink, and again while we recognize that the disease can be largely prevented by the disinfection of the discharges of the typhoid patient whenever he is met with, we do not know as much as is desirable concerning those influences which predispose individuals to infection by the bacillus of EBERTH. It is also a well-recognized fact among physicians, that out of a given number of persons exposed to infection only a certain proportion will become ill because of natural or acquired immunity, but the point as to whether typhoid infection can occur through sewer gas or the inhalation of bad air from decomposing fecal matter is still a matter of dispute. In all probability the inhalation of such impure air simply decreases the vital resistance of the individual so that he is unable to withstand the attack of the micro-organisms which he has taken into his body by other entrances than that of the respiratory system.

Our attention has been called to this matter by a recent discussion before the Royal Medical and Chirurgical Society of London upon the prevention of enteric fever. In the course of this discussion after the importance of disinfection of the discharges and clothing of the patient had been considered, Dr. PAYNE expressed the belief that the theory of infection by the inhalation of the typhoid organism was worthy of credence and Dr. TIVY, who followed him, endeavored to prove that this view was substantiated by the recent epidemic of typhoid fever at Clifton, England, although Dr. DAVIES, the medical officer of health, had conclusively traced it to a polluted milk supply. Dr. TIVY asserted that this epidemic was due to sewer gas poisoning arising from want of ventilation of drains, the foulness of these drains being increased by the drought which had been present during August, September and October. As a result of this the sewer gas found its way back into the houses, especially those situated at the highest parts of the drain.

It was thought by some of those present that Dr. TIVY's standpoint in this matter was a false one and that he had not advanced any strong reasons for his belief. In this connection, however, it is interesting to recall experiments which were made some years ago (1894) by ALESSI, an abstract of which was published in the *Centralblatt für Bakteriologie*, in 1894. In connection with his researches, made in the Hygienic Institute of the University of Rome, this investigator used rats, guinea pigs and rabbits in an attempt to determine the influence which exposure to a vitiated atmosphere would produce in rendering animals susceptible to infection. The rats were placed in a cage with a perforated bottom, and this was placed over the opening of a privy, while the guinea pigs and rabbits were placed in similar receptacles in which their own excreta was allowed to accumulate. When these animals were inoculated with a small quantity of a culture of typhoid bacillus they died within twelve to thirty-six hours, although the same dose of the same culture injected into control animals produced no injurious effect. In the animals which succumbed to typhoid infection there was found a hemorrhagic enteritis, an increase in the size of Peyer's glands and in the spleen, and typhoid bacilli in the blood, liver and spleen. The time required to produce this predisposition for typhoid infection as quoted by STERNBERG was from five to seventy-two days for the rats, seven to fifty-eight days for the guinea pigs, and from three to eighteen days for the rabbits. ALESSI also determined the fact that this increased susceptibility to infection decreased after a time. This is interesting in view of the fact that human beings also seem to become habituated to breathing an atmosphere containing sewer gas, so that they are less susceptible to infection than those who have recently arrived in the neighborhood. We think, therefore, that TIVY's belief that sewer gas may produce at least a predisposing influence is correct.

Numerous other instances in which human beings have been exposed to a vitiated atmosphere and have been taken ill with typhoid fever might be cited. These have been reported by BUDD, BOUCHARD, MURCHISON, LIEBERMEISTER, LANDOUZY and others. HENRY quotes two of LANDOUZY'S cases which are of considerable interest. In one of these a man of 25 years, living in a family of ten individuals, all of whom used an identical diet and drink, slept in a room the air of which was contaminated by the ventilating pipe of a public water-closet, and suffered from typhoid fever while all the rest of the family escaped. The second case was that of a girl of 15 years who lived in a family of five individuals and was exposed to the air from a similar pipe and became ill with the disease.

Perhaps the most interesting of these cases is another one reported by W. V. KEATING in the "Transactions of the College of Physicians of Philadelphia," for 1879. In this instance four women who returned

to their home, which had been tightly closed for two months, were attacked with typhoid fever. The house was filled with a foul odor and an examination proved that the family had been "actually living in a sewer," there being no traps to the basins and the sewer gas having free entrance to the various apartments of the house.

Neither the experiments of ALESSI nor the cases which we have cited prove, as we have already stated, that typhoid infection takes place by the respiratory tract. They simply indicate that by such means a predisposition to the disease is developed, or to speak more correctly its vital resistance to a filth disease is lost.

PREMATURE BURIAL.

There are probably few persons endowed with lively imaginations who have not at some time in their lives had grewsome fancies about being buried alive, that is if the idea has ever been suggested to them. It forms the theme of many sensational tales of fiction, and is so much a matter of common belief that few would be disposed to question its possibility, or its occasional occurrence. In certain continental European cities this possibility is so fully credited that waiting vaults or guarded and watched mortuaries are kept up at public or private expense in the cemeteries, where all bodies are kept for a certain period before interment, so as to prevent any such occurrence. These are not generally so managed as to insure absolute safety from such accidents, yet they relieve the public apprehension, and may under certain circumstances be occasionally, though it must be very rarely, effective in preventing a premature burial.

In one of our English contemporaries, the *Medical Press and Circular*, there have recently appeared some articles and communications on this subject which indicate the interest the subject excites in the medical profession, as well as the difference of opinion that exists in regard to it. One writer doubts that a single well authenticated case of actual burial of a living person has ever been satisfactorily proven; others consider it not only a possible, but a much more common, occurrence than is generally supposed. From what we know of the possibilities of the trance conditions one is hardly prepared to absolutely deny that burial might occur before death, but that this has often occurred except it may be in times of panic from epidemics is questionable enough, and Dr. WALSH is justified to a certain extent in his doubts as to the evidence in the reported cases. The fact that one writer claims to have received sixty-three letters from persons who had escaped living burial is of less weight inasmuch as no details are given, and the natural love of narrating the marvelous or the unusual is a factor to be calculated with in such testimony.

That premature burial may occur, however, is in its way a presumption that it has occurred and may happen again under circumstances that favor such a dreadful accident. The difficulty in some cases of determining whether the condition is actual death or only a suspension of the vital activities with a possibility of their full reinstatement is very great, and, it is claimed by some, is practically impossible under ordinary conditions and with the usually available means. The possibility of premature burial can therefore be reasonably admitted, and all the more so in cases of epidemics that cause general panic and hurried and unceremonial interments, and also in cases of infectious diseases occurring sporadically but which for reasons of public safety require a hasty burial. The only real universal practical test is commencing decomposition, though others are generally possible and effective, and it is therefore impossible that such an accident as the burial of a living person can often occur. The experience of the waiting or observation mortuaries in some European cities supports this view, though their continuance implies that the belief in their utility maintains itself in spite of the rarity of occasions.

The most elaborate provision against living burial is one recently announced by a Mr. CARNIS of Paris, which he calls "Karnice," and which is to render all burials provisional, as it were, for the person entombed, while still inviolate to all the rest of the world. The apparatus is to be attached to the coffin for a certain period after interment, is set in action by the least movement of the supposed corpse, while impossible to be tampered with by outside parties; it gives an alarm and admits light and air to the buried person; is cheap and easily adapted, and can be used repeatedly, so that its employment would only cost a slight rental, and a few such apparatuses would suffice for a large cemetery. If it is all that its inventor claims, it would appear to be almost an absolute safeguard against death from premature interment. On the other hand, it would seem that it might be liable to give false alarms, if by gaseous decomposition or any other cause a movement of the corpse should take place, though this might perhaps not outweigh or seriously affect its value in the minds of those fearing the accident of being buried alive. It is not improbable that many of the dislocations or derangements of bodies, found on exhumation, are due to the causes alluded to, and the possibility of their occurrence should always be taken into account.

The horror of finding oneself in a living tomb appeals directly to the imagination of every one; it seems the most terrible of all possible deaths. There is, however, another way to look at it when the physical conditions are considered. The air space in a tight coffin under five feet of earth is limited, not over two or three cubic feet at the utmost outside of the space ordinarily occupied by the body. Unless con-

sciousness returned simultaneously with respiration, asphyxia might possibly precede it and annul it—there might be some evidences of convulsion that might be interpreted as voluntary movement, but they are not necessarily indicative of such. The cases where consciousness exists throughout must be rare, though they have been made much of in fiction, and are popularly believed to be almost the rule. It is no comfort to think that any one can be buried alive, but it is better to believe, as the facts warrant us, that the long lingering death in hopeless horror, and the powerless anticipation of the fate are still less probable events.

With the modern methods of preservation of remains which are so often employed, living burial is impossible and we do not hear of any accidental homicides brought about in this way, and with reasonable delay and care the possibilities of premature interment are reduced in all cases to almost nothing, if not absolutely destroyed.

THE CAFFREY BILL.

It is noted with some surprise that the health bill introduced by Senator CAFFREY, and proposed by him in the Senate, is not the result of any medical opinion in New Orleans or in Louisiana.

It seems that the Senator was last summer stopped by some local quarantine in an obscure town in Louisiana, and found it impossible to pass through the local regulations, whereupon the Senator as soon as Congress convened, introduced a bill calculating to prevent these arbitrary actions on the part of local boards.

We are informed by competent authority from New Orleans that no medical man in that State is believed to have recommended the bill.

CORRESPONDENCE.

What is to become of the Physician?

ORAN, MO., Jan. 24, 1898.

To the Editor:—In studying your editorial, "Is the apothecary doomed?" I am confronted with the question: What is to become of the physician? The same processes which seem to be destroying the apothecary are at work to destroy the doctor. The free dispensaries, colleges and hospitals, are gradually absorbing the patronage of physicians. No one will patronize the corner physician so long as he can get medicine and advice free at the dispensary. Some how or other I have not been very uneasy about the druggist or apothecary. I have always patronized him. Some few druggists have not treated me fairly; they have prescribed for my patrons, and I have some times filled my own prescriptions, but I never had any animosity toward druggists as a body. I dislike the substitutor or prescribing druggist, but I have always thought it necessary to have a good drug store in my neighborhood, and in order to do this I have always patronized my home druggist. I had rather make out my own prescription and have it filled by my home druggist, and I do not believe the wholesale men will gobble up all the trade and drive the corner druggist to the wall. There is going to be a reaction one of these days. There are a great many pharmacists in this country who have not studied pharmacy with the intention of being only salesmen for big firms; they have studied with the idea of doing a business of their own and they will not sit idly down and let their avocation be destroyed. The same thing applies to us. We will not sit still and allow the hospital man to absorb our business. We will quit patronizing specialists. We will quit sending our patients to hospitals. We will organize and fight for our rights. We will not submit to monopoly. The bulk of medical knowledge today is the fruit of the country practitioner's labor. He "laid the foundation and another has built thereon." Oh, no, the wholesale manufacturer can not absorb the druggist; nor can the hospitals and free dispensaries obliterate the country practitioner. As long as the "Upper Ten" (so-called) treated us fairly we submitted kindly to his pretense of superiority, but when he assumes the right of absorbing the whole business by the tricks of trade and a cut in prices, or any other underhanded trickery, he will find one of the most vigorous kicks coming imaginable. The druggist and practitioner were once true friends and their interests were the same, and when they see that there is a plan being formed to exterminate them, rest assured they will not submit to it. Nicely prepared tablets, triturates, or what not, can be prepared by one capable of making them at all, one place as well as another, and the corner druggist does not have to give up his business and hire out, neither does the country practitioner have to appeal to his city brother for aid. He can do as the pioneers did before him. He can perform his own surgical operations and leave the specialist to hunt up his cases wherever he can find them. If the wholesalers understand their position and how they obtained it, they had best look a "leedle ouit." Do not shove us too near the wall. We have some rights that must be respected. A word to the wise ought to be sufficient.

Respectfully, W. P. HOWLE, M.D.

"Foreign Medical Training for Recent Graduates."

ELIZABETH, ILL., Jan. 18, 1898.

To the Editor:—In an article written on the above subject by W. S. Caldwell, M.D., from Vienna, the writer would like to take a few exceptions. Quoting from Dr. Caldwell's article in the JOURNAL of Jan. 15, 1898: "Not because the subject is better understood or more skilfully taught than by our best teachers, but because the clinical material is much more abundant here and can be much better utilized for clinical purposes, and the number of those to be taught are much fewer in proportion to material available." Also: "There may be just as good courses as these at home, but I have not been able to avail myself of them *for I have not been able to find them.*" I simply wish to say that I for one *have* found "just as good courses as these at home," and though I have not myself enjoyed the "merits of Vienna" (?) I have enjoyed personally Czerny's clinic of Heidelberg and Schede's clinic of Hamburg, in the "Neuen Allgemeinen Krankenhause." My parents being of German birth, I of course had the German language at my command, so that my observations could not lack for want of this advantage to read and speak German. All the advantages enjoyed at Vienna and Paris, as given by Dr. Caldwell, are enjoyed at the Medical Department of the Tulane University of Louisiana, located at New Orleans; also at the New Orleans Polyclinic like advantages are to be obtained. These places of learning have at their disposal all the clinical material of the Charity Hospital, *as they think best for teaching purposes.* The proportion of medical students (in 1891 number 374) in proportion to the clinical material at hand

compares with any, as the records of the hospital will show that during 1891 a grand total of 23,537 patients were treated. Medical students spend half of each day in the hospital for the clinical study of disease and to treat the same under the guidance of equally as great instructors as those mentioned by Dr. Caldwell.

Who that has had the advantages of these instructors at this institution will not remember with pride, the venerable dean, Professor Chaillé, who taught us (diagnosed with us) our first lesson in diagnosis and in pathologic anatomy. In clinical medicine who does not think of Professor Elliot and Professor Joseph Jones. In surgery, how well T. G. Richardson, Edmond Souchon, Samuel Logan and Albert Miles will compare. True, some of these are gone before us, but in their place we find others equally pure in the faith, as Rudolph Matas, etc. I have mentioned names because Dr. Caldwell brings forth names to worship, and why not worship our own heroes. I am convinced that in our medical centers in this country, we are equal in every respect. I specially mention the Medical Department of the Tulane University and its equal advantages, because I personally know that the clinical advantages at the New Orleans schools are not surpassed anywhere, and especially not in clinical or internal medicine. The Louisiana State law confers this privilege on the medical profession, to properly educate doctors. And again, if Dr. Caldwell prefers the "French professors," he will find a "French born teacher," who "explains every step of his operation," in the personage of Professor Souchon, in the above Medical Department of the Tulane University, who is professor of surgery and learned to his finger tips. There may be other schools in this country equally as well prepared to stand equal in any branch of medicine, so that "recent graduates," undergraduates and old doctors need not cross the sea to get superior medical information.

PHILIP ARNOLD, M.D.

Do Adult Squirrels Castrate Each Other.

CHICAGO, ILL., Jan. 25, 1898.

To the Editor:—In the article on eunuchs in the previous number of the JOURNAL I stated that when adult gray squirrels engage in battle one often castrates the other. I had this information from a distinguished naturalist, who inferred it because a considerable portion of wild squirrels are found to be emasculated.

Dr. A. S. Allen, an interne of Mercy Hospital, Chicago, furnishes the following facts observed by him which partly contradict the naturalist.

Dr. Allen says that although about one-third of the wild squirrels killed by hunters are found to be castrated, yet he thinks it is not done in fighting. He says that a number of gray squirrels lived protected in the trees about his former residence. A female raised a litter of young in a tree close to the house. One day when the young were about one-quarter grown he observed the male trying repeatedly to enter the nest, but the female, which in that species is the largest of the two, fought him off and drove him away. This repeated several times, and the male finally desisted. Some time later the female went away apparently to gather food. Before she returned the male reappeared, entered the nest and created a great disturbance there, so that the Doctor climbed the tree and examined the young. He found four young quarter-grown males and one or two females. Three of the young males had been freshly castrated, the old male squirrel having bitten their scrotum and testes cleanly and smoothly off with his sharp incisors.

In a fight between two full grown males it would seem very difficult for either to hold the other still enough to admit of biting off his scrotum, but the young are more helpless; hence it is probable that all the castrated squirrels taken by hunters are mutilated in infancy by the old males. It is a curious instinct and one difficult to account for by natural selection, since it would not seem to result in the escape of the strongest nor the fittest from mutilation, and consequently would hardly tend to benefit or perpetuate the species.

Dr. Allen says in all his hunting he never found a fresh castration wound in an adult, so that he believes the operation is done only on the very young. He is of the impression that the castrated ones grow larger, and are apt to be fatter than the perfect males.

EDMUND ANDREWS, M.D.

Leprosy in Norway.

NEW YORK, Jan. 8, 1898.

To the Editor:—Under "Leprosy in Norway," Dr. W. S. Caldwell writes to the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, Dec. 18, 1897: "Speaking to my host (Hansen's first assistant) in a congratulatory tone of our almost entire exception from the disease in the United States, he answered me warmly and decidedly, saying: 'You have plenty of lepers in your country, but your physicians do not recognize the disease, and allow the patients to run at large, while here in Norway we diagnose the malady in its early stages and isolate the patients.' In a late visit of Dr. Hansen to the United States, he told me that the Doctor found three cases in the hospitals in Chicago, and twice as many in New York, as well as encountered several cases of true leprosy upon the streets of each city, all of whom were being treated for lupus, syphilis or some other form of skin disease."

This direct slap by a Norwegian physician (Hansen's first assistant) at the intelligence of American physicians is in keeping with what we know of the general behavior of the Scandinavian sages toward ordinary medical mortals. I know from the most creditable source, that these flattering opinions were expressed to the whole medical world, as far as it was assembled at Berlin, and produced a general feeling of disgust: "Norway is interested in the leprosy question only as the world's teacher; she has nothing to learn." This truth was continually flaunted in the face of the Conference, whosoever does not recognize and appreciate the superiority, in point of leprosy, of these superior instructors, is stupid, and stupid people, as one of them frankly told me, ought not to be helped, they do not deserve it.

I venture to affirm that not only the ordinary practitioners of those parts of our country where the Norwegian immigrants stop, are the superior of the general practitioners of Norway in every way, but that the medical men of our large cities (New York and Chicago are quoted) *do not* diagnose the leper as lupus, syphilis or some other form of skin disease, as Hansen is reported to have told his first assistant.

Is your correspondent quite sure of his statement that Hansen mentioned such errors of diagnosis in the large hospitals of New York and Chicago? If he visited these hospitals there were American physicians with him, who might now come forward and confirm or deny the accuracy of Hansen's assertions.

ALBERT S. ASHMEAD, M.D.

Department of Public Health.

CHICAGO, ILL., Jan. 11, 1898.

To the Editor:—I have been reading with interest the various notices in the JOURNAL relative to the establishment of a Department of Public Health at the National Capitol and the furtherance of such legislative enactments as will tend toward the preservation of the public health. Early in 1893 I advocated such measures and devoted attention to the question in a treatise on Asiatic cholera written and published by me in that year. There is one pronounced element of danger in connection with the favored change and to this I would respect-

fully call the attention of my professional colleagues. This is the fact that peradventure some "practical politician" would be made the Secretary in charge of the new portfolio instead of a medical hygienist.

The ridiculous and unfortunate state of affairs that would be induced under these circumstances need hardly be dilated upon. The proper person to fill the new position must be a physician, and he must be a physician who is high authority on questions connected with preventive medicine.

JOHN A. BENSON, M.D.

Professor Physiology of the Nervous System in the College of Physicians and Surgeons, Medical Department State University, and Professor of Psychologic Jurisprudence in the Chicago School of Law.

The Antivivisection Bill—Necessity for Action.

BALTIMORE, Jan. 17, 1898.

To the Editor:—I hope that the JOURNAL will keep up its campaign against the antivivisection bill in the Senate (1063). I am writing letters to the physicians in different States urging them to write themselves and induce others to write to their senators urging them to oppose the (Gallinger) bill. Personal letters from those known to have influence with senators will accomplish more at present than protests from societies. Would it not be worth while to call attention in the JOURNAL to the importance of such personal appeals to senators? Very sincerely yours, W.

Indiana State Medical Society.

INDIANAPOLIS, Jan. 24, 1898.

To the Editor:—Owing to a delay in rebuilding the leading hotel of Evansville, the profession of that city have decided that it would be unwise to attempt to hold the annual meeting of the Indiana State Medical Society there this year. At a meeting held today in the office of the president, Dr. W. N. Wishard, attended by the officers and chairmen of the various committees, it was voted unanimously to transfer the meeting to Lafayette. The date remains unchanged, May 5 and 6.

By kindly giving this notice a place in your paper you will confer a great favor upon the profession of Indiana.

Very respectfully, F. C. HEATH, M.D.

Must Join State or Local Society.

GLENWOOD SPRINGS, COLO., Jan. 19, 1898.

To the Editor:—Is it compulsory for me to belong to a medical society, either local or State, before I can join the AMERICAN MEDICAL ASSOCIATION? We have a State but no local medical society. Yours truly,

L. A. ROBINSON, M.D.

ANSWER:—The bylaws require that membership by application can be obtained only by having the application certified by the president and secretary of a local or State society in affiliation with the AMERICAN MEDICAL ASSOCIATION.

Concerning an Alleged Birthmark, "Snake" eye.

MILWAUKEE, WIS., Jan. 18, 1898.

To the Editor:—There are several thousand physicians in this country and no doubt several hundred who may be reached within an hour or so of travel from the office of the gentleman in Waukegan, Ill., who are capable of properly cataloguing his case of "snake" eye within some one of the not uncommon congenital anomalies, probably congenital coloboma or fissure of the iris. If the Doctor would give the lad the benefit of a consultation with an oculist, he would not only learn something but help his "myopic" patient whose "eyes are elongated antero-posteriorly."

Courteously yours, H. V. WÜRDEMANN, M.D.

The Yellow Fever Microbe.

NEW ORLEANS, LA., Jan. 22, 1898.

To the Editor:—New Orleans Medical and Surgical Journal for February, 1898, will contain an article upon the "Serum Diagnosis of Yellow Fever," by Archmaid and Woodson of New Orleans, La. These observers, working in the laboratory of the Louisiana State Board of Health, report the occurrence of a characteristic agglutinative reaction of yellow fever blood with the bacillus icteroides in over 70 per cent. of a series of fifty cases with which the experiments were conducted. They consider the reaction of decided value in the diagnosis of early mild and atypic cases. Yours very truly, R. S. W.

ASSOCIATION NEWS.

Prof. Samuel C. Busey, who was elected to deliver the annual oration on State Medicine, has resigned the position. The members will learn this with regret, and also that the ill-health of Professor Busey was the cause of his resignation.

Section on Materia Medica and Therapeutics.—The following papers and discussions have been promised for the meeting at Denver, Colo., June 7–10, 1898:

Yellow Fever; discussion by Surgeon-General Geo. M. Sternberg of Washington, D. C.; Prof. John Guiteras of Philadelphia, Sollace Mitchell of Jacksonville, Fla.; T. S. Scales of Mobile, Ala.; G. B. Thornton of Memphis, Tenn., and H. M. Bracken of Minneapolis, Minn.

Aims of Modern Treatment of Tuberculosis, by Prof. Edwin Klebs of Chicago.

Serum Therapy of Tuberculosis, by Prof. S. O. L. Potter of San Francisco.

The Use of Remedies in Diseases of the Heart and Blood Vessels, by T. Lauder Brunton, M.D., D.Sc., F.R.S., London, England.

The Mescal Button, by Prof. D. W. Prentiss of Washington, D. C.

The Modern Intestinal Antiseptics and Astringents, by Wm. Frankhauser, New York.

To What Extent is Typhoid Fever Favorably Modified in Its Course, Duration, Termination or Sequelæ by the Administration of Drugs, by Frank Woodbury of Philadelphia.

Strychnin, by J. N. Upshur of Richmond, Va.

Methods of Teaching Materia Medica and Therapeutics, by Prof. G. H. Rohé of Baltimore, Md.

The Use of Electricity by the General Practitioner, by Caleb Brown of Sac City, Iowa.

J. E. Atkinson, Baltimore; Henry Beates, Philadelphia; T. M. Balliet, Philadelphia; Geo. F. Butler, Chicago; J. Solis Cohen, Philadelphia; N. S. Davis, Jr., Chicago; P. J. Farnsworth, Clinton, Iowa; E. D. McDaniels, Mobile, Ala.; J. E. Moses, Kansas City, Mo.; Jos. Remington, Philadelphia; L. E. Sayre, Lawrence, Kas.; H. V. Sweringen, Fort Wayne, Ind.; E. L. Stephens, Fort Worth, Ind.; Leon L. Solomon, Louisville, Ky.

The Chairman will be pleased to receive and place upon the program subjects for discussion and papers.

JOHN V. SHOEMAKER, Chairman,
1519 Walnut Street, Philadelphia, Pa.

SOCIETY NEWS.

The Kalamazoo Academy of Medicine of Kalamazoo, Mich., met in annual session in their rooms Jan. 4, 1898. The Society's rooms are in the Public Library Building, a gift to the city of Kalamazoo by Dr. E. H. Van Deusen, a member of the Academy, and as a meeting place for a medical society, will compare favorably with the rooms of any similar organization in any of the metropolitan cities. There were eighty-six members pres-

ent at the afternoon session. The report of the secretary showed 105 active and 18 corresponding members and 1 honorary member. The treasurer's report showed a good working balance. In the afternoon the following papers were read by the writers: "The Newer Surgery of the Radical Cure of Hernia," by Dr. E. Wyllis Andrews of Chicago; "Toxic Amblyopia," by Dr. Fleming Carrow of Ann Arbor; "The Regular Profession of Medicine," by Dr. W. H. Haughey of Battle Creek. At the evening session Dr. J. M. Elliott, the retiring president, gave an address, which was followed by a banquet at the American Hotel. There were seventy-six members present at the banquet. The following officers were elected for the ensuing year: President, William M. Edwards; first vice-president, J. M. Rankin; second vice president, Wilbur F. Hoyt; secretary, A. D. Lake; treasurer, O. B. Ranney; librarian, E. H. Van Deusen; censors for three years, F. C. Myers and C. W. Huff.

At the Annual Election of the New York Medical League Jan. 14, 1898, the following officers were chosen. The medical profession shows the greatest and meanest of followers, and unfortunately, the latter have had too much influence, from the simple reason that the bad are always active and the good passive. The League believes that the profession can be restored to its former high position and the names of the officers for the year are sufficient evidence of the earnest and determined opposition which awaits the schemes of the treacherous and the self-seeker. Manhattan Section New York Medical League: President, Joseph E. Janvrin; vice-president, Frederick R. Sturgis; recording secretary, J. C. Schminke; corresponding secretary, Douglas H. Stewart; treasurer, E. Eliot Harris; trustees, Frederick H. Wiggin, E. J. Gallagher, S. Kennedy; finance committee, W. H. Weston; executive committee, J. Smith Peterson, J. E. Messenger, George D. McGauran, Wickes Washburn; delegates, Adolph Rupp, Heinrich Stern, Joseph H. Byrne.

PUBLIC HEALTH.

The results of Sanitation in the German army for the period of the past thirty years show that twenty-three thousand fewer men fall ill every year than formerly and that twenty-two hundred fewer die.

Loomis Sanitarium for Consumptives.—On January 15 a training school for nurses was opened at the Loomis Sanitarium, Liberty, N. Y. The opening class had thirteen members. While these nurses will receive regular training such as is given in other schools, special attention will be paid to instruction in the care of cases of tuberculosis. This departure in the way of nursing is a new one, and is justified by the ever increasing demand for nurses for this class of patients. It is believed that these nurses can be constantly and advantageously employed in health resorts and as traveling companions for young people in incipient stages of the disease. The course will be of two years' duration.

Still the Plague.—The fighting in India has monopolized the attention of the racialists of at least one hemisphere so that plague ravages in Poonah, Bombay and the Deccan have passed unnoticed. Thousands have fled from Poonah and Bombay, in each of which cities the weekly mortality is from five hundred to six hundred. The aid of the military has again been invoked. Poonah City is divided into ten wards, and in each ward an officer has thirty soldiers under his command. Every morning the plague centers are cordoned. No one is allowed to leave them except after having been medically examined. In the mean while each house is searched, and the plague-stricken are taken to the hospitals and their houses are disinfected and whitewashed. This system is working well, and the outlook is improving. A report of the epidemic in Damanu, Portuguese India, with the verification of the London *Lancet*, December 18, gives cheerful accounts of the value of inoculation lymph, chiefly among the Parsee community, who at an early stage acquiesed. Between March 26 and the end of May, the uninoculated furnished a mortality of 24.6 per cent., while the ratio of the inoculated was 1.6 per cent. The demand for lymph necessitated the substitution of the weaker article for the stronger and gave a decided accentuation in favor of the latter. Still even there the case mortality showed a corresponding wavering against the expectant treatment.

The Relations of Medical Societies to the Public Health. The Presidential address of Dr. Edward Seaton, before the Society of the Medical Officers of Health of Great Britain, considered the subject of the work of the medical societies in its relation to public health. Much of the work of the pathologic, medical and clinical societies, and the unremunerated researches of individuals, whether undertaken in a purely scientific spirit or with an immediate utilitarian motive, had contributed greatly to the promotion of the ends which their society more directly or exclusively had in view. But the Epidemiological Society, which occupied a position intermediate between the strictly medical societies and their own, was above all others engaged, as its objects stated in the charter of incorporation showed, in pursuits identical with theirs. Then there were the British Institute of Preventive Medicine, the Sanitary Institute, the Institute of Public Health, the Jennerian Society, and the British Medical Association, which, though primarily a union of medical men, had a public health section at its annual congresses. The Sanitary Institute and one or two others embraced men of all professions more or less interested in public health, and there was no doubt that much advantage accrued from association with architects, engineers, chemists, geologists, etc., as well as from the museums and exhibitions promoted by some of these societies. Their various transactions and journals were of great value, yet members of their own society who belonged also to the Epidemiological Society and the Sanitary Institute could not but consider that the multiplication of societies involved a loss of power. The Maidstone epidemic had shown how different was the sanitary examination of water-supplies from the merely chemic question of the analysis of adulterated foods and, also, how important was a knowledge of the normal condition of a given water and of the contingent dangers to which it was exposed apart from actual contamination. Chemic analysis, without bacteriologic examination and other considerations to which he had alluded, might tend to a false sense of security, but taken in conjunction with these it should serve as a delicate barometer and an indication of impending danger. But while such catastrophes aroused public attention owing to their suddenness, it ought to be known that there was in some districts a constant prevalence of typhoid fever attributable to other causes than the pollution of a certain public water-supply, and the record and publication of the distribution of any local excessive incidence of this and of other preventable diseases, as was done by the Surrey County Council, by stimulating preventive action contributed in an important degree to the averting of such outbreaks and to the saving of life without the supervention of those terrible lessons. Such a society as he had indicated should include all the leading epidemiologists who, without belonging to the public service, had made the subject of communicable diseases their special study, and its inauguration would, he repeated, be a fitting and worthy commemoration of the jubilee of the institution of medical officers of health.—London *Lancet*.

A Serious Epidemic of Typhoid Fever Due to a Contaminated Water Supply.—All England has been excited and concerned by the epidemic of typhoid fever which is attracting so much attention at Maidstone, Kent. There have been 1,700 cases in that town and its vicinity and fifty deaths have occurred. The epidemic has spread at the rate of 120 cases daily, and the authorities are working energetically in their efforts to crush out the fever. The hospital accommodation is inadequate, temporary hospitals are being erected and the schools are being

converted into sick wards. There have been numerous cases of typhoid fever throughout the country among people who recently visited Maidstone. The town authorities of that place are held responsible for the outbreak, owing to their refusal to renew the appointment of a watchman for the water supply at a salary of $200 yearly. Quite a number of difficult conditions have been surmounted by the authorities. The fitting up of emergency hospitals has been no light task. The houses and schoolrooms utilized had not the necessary sanitary conveniences. The work had to be continued day and night without a moment's respite. Nor was it easy to get together some three hundred beds for the patients and to lodge more than one hundred nurses. Then the patients and nurses had to be fed, and this involved the organization of a commissariat department which was altogether out of the ordinary attributes of local administrative work. But soon another difficulty arose. A large amount of linen accumulated which was dangerouly soiled by the patients. If this linen was scattered over the town and washed anyhow and by anybody the consequences were likely to be very serious. The medical officer of health, Mr. Matthew A. Adams, thereupon conceived the idea of establishing a public laundry for dealing exclusively with the infected linen. With the very efficient aid of Mr. Jackling, the sanitary inspector, a steam laundry with all the most recent and improved machinery was promptly opened. Carts are now sent around the town with numbered canvas bags. The linen from each patient is placed in a separate bag, distinguished by its number. On reaching the laundry the bags without being opened are plunged into a large boiler, where their contents are thoroughly disinfected by prolonged boiling. Then only are the bags opened and each article marked with a number corresponding with that of its bag. The articles can be washed in the ordinary manner. But so great is the amount of work that had to be done that it was necessary to establish four large boilers set in solid brickwork, and to put up huge tents seventy-five feet in length in which the linen is sorted. Another great difficulty soon arose. How was so large a quantity of linen to be dried? Fortunately, in a field opposite there were two roast houses for the drying of hops. These curious looking, cone shaped structures are familiar to all who travel in hop-growing countries. In the lower part there is a furnace where smokeless anthracite coal is burnt. Above the furnace and just under the cone shaped roof there is not a floor, but horsehair matting resting on rafters. It is on this matting that the hops are placed to dry, as the heat passes through readily. For laundry purposes it was necessary to construct a framework all around the roof above this matting so as to hold ropes or poles on which the linen is hung to dry. The *Lancet* states that an official inquiry has been ordered, so that the blame may be located. No doubt the water company will be incriminated in the first instance and the local authorities will be held blameworthy for the prolonged continuance of the epidemic. The later reports of the medical officer of the Local Government Board record epidemics which prove incontestably that the grossest and most culpable neglect prevails as regards a number of our public water services, whether the supply is derived from springs, deep wells, gathering grounds or streams; and we fear that at times the extent of the negligence and danger bears a definite relation either to the amount of pecuniary profit actually derived from the sale of the water to the public or to efforts made to render the profit greater. This is a state of affairs which has hitherto been all but ignored by parliament in granting powers to water companies, whether municipal or private, and it is to be hoped that the attention which has been drawn to the subject by the Maidstone epidemic will lead to a much more careful watch than has usually been exercised over the powers and liabilities conferred and incurred in bills as to public water supplies. The population of Maidstone Borough is estimated at about 32,000.

NECROLOGY.

EDMUND CARLYLE VERMEULEN, M.D., College of Physicians and Surgeons, New York, 1860, died in Philadelphia, his home, January 21. He was the son of a Dutch Reformed clergyman and was born in New York City in 1833 but lived in Hoboken, N. J., where he had been an apothecary previous to his graduation in medicine. After a competitive examination he was appointed as Assistant Surgeon, U. S. N., Nov. 16, 1861 and rose to the rank of Master Jan. 24, 1862. He was in active service throughout the war with a record of executive ability and served at various naval stations until 1882 when he was retired. It is told that while serving on the *Granite City*, the vessel with all the officers and men were captured by the Confederates. He was a prisoner four months. His health had been poor for some years before his death.

CORNELIUS VAN KEUREN, M.D., died at his residence in New York City, January 21. He was born in old Greenwich village, once a section of the city where the Holland Dutch element was somewhat prominent. At the out-break of the war he joined Duryea's Zouaves and was mustered out at the expiration of his term of enlistment. In 1874 he received his degree from the College of Physicians and Surgeons, New York, and many years ago was appointed a surgeon in the Police Department, retiring with a pension, last October.

CAROLINE M. DODSON, M.D., Woman's Med. College, Philadelphia, 1874, died January 9. She was born in Keosauqua, Iowa, 1845, and after graduation at once entered the profession in Philadelphia. As a platform speaker on educational and temperance topics she soon became conspicuous. In 1891 she became president of the Woman's National Health Association, without a surrender of her work in the Woman's Suffrage Association or of her interest in the Baptist Sisterhood and Sabbath school teaching.

ERNEST RINGER, M.D., a licentiate of the New York County Medical Society, 1874, died at his home in New York City January 9. A native of Germany, with a university education, he came to this country about fifty years ago, and here continued in practice until within about ten years of his death at the age of 77 years. At one period of his life he was a medical writer, holding somewhat peculiar views upon therapeutics.

WILLIAM H. ROBB, M.D., Albany, N. Y., 1865, of Amsterdam, N. Y., died January 12 in Selma, Ala., aged 54 years. He was a prominent member of the AMERICAN MEDICAL ASSOCIATION and a fellow of the New York State Medical Association, of which he was one of the founders. His illness began at the annual session of the latter association last October, and with an attack of influenza subsequently superadded, put him beyond the possibilities of ultimate recovery. A popular citizen, judicious sanitarian, and valued contributor to medical literature, his place can not well be filled.

ORANGE W. BRAYMER, M.D., Jefferson, 1888, member of the surgical staff of the Cooper Hospital, Camden, N. J., died from blood poisoning January 9. The cause was thought to be due to an inoculation of a scratch upon the forehead after an operation at the hospital performed by him about two days before.

LEWIS W. PENDLETON, M. D., Albany, N. Y., 1864, of Portland, Maine, and house physician of the Flagler Hotel, Florida, died at the Palm Beach Inn, Jacksonville, Fla., January 12, aged 53 years.

HENRY S. DEAN, M.D., Jefferson, 1852, born in Holland, Mass., died January 14, aged 74 years. He began practice in South Coventry, Conn., and there resided until his death. He was an active member of the Connecticut State and of the Tolland County Medical Society, besides having served in the Connecticut General Assembly in 1872-3.

C. E. ULMER, M.D., died in Atlantic City, N. J., of tuberculosis, aged about 40 years, on January 15. He was at one time county physician of Atlantic County, N. J.

F. R. v. SCHNEIDER, Vienna, aged 85 years. A laboratory accident in 1871 injured both eyes and arrested his brilliant scientific career as professor of chemistry, etc., investigator and author of works on chemico-legal and hygienic questions.

Since then he has occupied a prominent position in sanitary and hygienic councils, his services winning him many honors, among them a title and seat in the legislature.

SAMUEL P. HARNED, M.D., N. Y. University, 1868, for many years Township physician, died at his home in Woodbridge, N. J., January 18.

HENRY S. DEAN, M.D., South Coventry, Conn., January 15, aged 74 years.——F. K. Hall, M.D., Pittsburg, Pa., January 12, aged 71 years.——W. C. Nixon, M.D., Shannon, Ga., January 13, aged 55 years.——J. H. Otto, M.D., Milwaukee, Wis., January, 15, aged 36 years.——W. H. Robb, M.D., Amsterdam, N. Y., January 12, aged 54 years.——William Henry Sibert, M.D., Kansas City, Mo., January 13, aged 48 years.——J. C. Thompson, M.D., Rollersville, Ohio.—— J. W. Waters, M.D., Lexington, Ill., January 15, aged 70 years.——James F. Barron, M.D., Clinton, Ga., January 18, aged 70 years.——C. E. Ulmer, M.D., Atlantic City, N. J., January 15, aged 40 years.—— Lysander T. White, M.D., Cortland, N. Y., January 16, aged 55 years.——Angel Vasquez, professor of organic chemistry and pharmacy at Santiago, Chile. A physician and hygienist of national prominence.——C. B. Day, M.D., Glencoe, Minn., January 13.——J. C. Thompson, M.D., Rollersville, Ohio, January 4, aged 76 years.

ORANGE W. BRAYMER, M.D. At a special meeting of the District Medical Society of Camden County, N. J., held January 10, the following was adopted:

We, the Camden District Medical Society assembled, called together by the sudden death of our esteemed associate, Dr. Orange W. Braymer, do hereby acknowledge, with mingled grief and humility, our child-like misapprehensions of such transitions in life.

While yet in the full vigor of his professional manhood, and while attending the surgical needs of a suffering patient the Angel of Death appeared, and very soon carried him to the bourne "Where his weary brain and tired feet, will no longer brave the midnight summons, nor attend the calls of a poor suffering humanity."

Need we recall his manly form and earnest kindly face, or rehearse his many deeds of charity, and devotion to his profession, to remember him. Nay, it is well known by those who knew him best, that his illy-requited devotions to his profession and his patients, his faithful friendships, and conscientious performance of all duties, indicated his true nobility and reflected honor upon us, as well as upon his family, church and State. His life is worthy of emulation, and may its impress be indelibly stamped upon our tablets of memory.

His bereaved family, crushed by the sudden loss of an affectionate husband and father, can obtain consolation alone from that God who as Divine Ruler of the Universe, "knows best how to give, knows best when to take away."

Therefore, as a slight token of esteem and love for our dead, be it hereby

Resolved, That these sentiments so well engraved upon our hearts, be recorded upon the pages of our Society's history and also transmitted to his grieving family as a memento of our sympathy, and be it further

Resolved, That we attend in a body the last sad rites upon our dead brother, and bow with submission and humility to the will of God our Creator.

O. B. GROSS, M.D.
J. M. RIDGE, M.D.
D. BENJAMIN, M.D.
JOS. H. WILLS, M.D.
E. E. DE GROFFT, M.D.
Committee.

BOOK NOTICES.

Transactions of the Medical Society of the State of North Carolina. Paper, pp. 184. Illustrated. Wilmington, N. C. 1897.

This volume is on excellent paper, well edited and of excellent typography, and contains full proceedings of the forty-fourth annual meeting, held at Morehead City, N. C., June 8, 9 and 10, 1897. Among other papers included we note: "When to Operate;" "Surgical Treatment of Hemorrhoids;" "A New Method of Dealing with Inoperable Cases of Cancerous Affections of the Uterus;" "The Ideal Antipyretic;" "The Keystone of the Medical Arch;" "The Microscope in Diagnosis of Malaria;" "An Interesting Case of Appendicitis;" "A New Treatment of Hydrophobia: Report of a Case: Recovery" "Psycho-therapeutics;" etc. An appendix of 48 pages includes the Constitution and By-laws and the Code.

Transactions of the Luzerne County Medical Society, for the year ending Dec. 31, 1897. Paper, pp. 208. Wilkesbarre, Pa. 1897.

The contents of this volume comprise: "The Hygiene of the Jews;" "Progressive Pernicious Anemia;" "Diabetes;" "Intubation and Antitoxin in Membranous Croup;" "The Modern Conception of the Nervous System;" "Operative Interference in Epilepsy;" "Discussion of Measles;" "Fracture of Skull and Treatment;" "Treatment of Phthisis;" "Mastoid Disease Followed by Sinus Thrombosis, Meningitis and Death;" "Traumatic Neurosis;" "Placenta Previa;" "Cerebral Localization;" "Double Consciousness;" "Serum Therapy;" "The Proposed Sanitarium for Tuberculosis at White Haven;" "Hematozoön Malariæ;" "Tetanus;" "Acute Diseases of the Heart;" "Syphilis," and "The Theory of the Extension and Retraction of the Neuron Terminal." The excellent paper and typography make this volume a credit to the Society.

Transactions of the Arizona Medical Association. Paper, pp. 66. Phoenix, Ariz. 1897.

This volume covers the work of the sixth annual session of the Arizona Medical Association, held at Phoenix, Arizona, January 26, 1897. Eleven papers are included.

Transactions of the Mississippi State Medical Association. Paper, pp. 212. Illustrated. Biloxi, Miss. 1897.

Besides the usual reports, etc., found in society transactions, this volume contains the Constitution and By-laws of the Society and the papers read at the twenty-ninth annual session, held at Vicksburg, Miss., April 15, 16 and 17, 1896, twenty-three in number, some with illustrations.

Kalender fuer Frauen- und Kinderaerzte. Von Dr. Med. EICHHOLZ, Bad Kreuznach, und Dr. Med. SONNENBERGER, Worms. II Jahrgang. 1898. Kreuznach: Ferd. Harrach. Preis. Mk. 2.50.

This wallet-shaped leather bound volume contains memorandum pages for each day of January, February and March, tables of drugs and doses, pages for filling out with data concerning the patient, numerous short articles descriptive of diseases peculiar to women and children, Prussian rules for physicians, etc., altogether making a handy and valuable compilation for the physician. The matter is printed in German. Three supplements contain memorandum pages for the months April–December, 1898.

MISCELLANY.

Dr. Robert T. Wilson is to succeed his father, Dr. H. P. C. Wilson, as chief surgeon of the Woman's Hospital, Baltimore, Md.

A Change of Name.—The British Institute of Public Health will be styled in future the Royal Institute of Public Health, and Queen Victoria has accepted the office of patron.

Last Year's German Immigration shows a wane. In 1897 it was the lowest since 1874. It aggregated only 23,220 against 32,114 in 1896 and has declined steadily since 1893, when 87,577 left Europe.

Honors After the British Jubilee. The honor of Knighthood has just been conferred by Queen Victoria on Dr. John Struthers, late president of the Royal College of Surgeons of Edinburgh, and Dr. John Batty Tuke, president of the Royal College of Physicians of Edinburgh. Professor Gardiner, dean of the Faculty of Medicine, Glasgow University, has been promoted to be Knight Commander of the Order of the Bath

(K. C. B.), and Professor D'Arcy Thompson, British delegate at the recent conference on the Behring Sea Fisheries, has been appointed a Companion of the same order (C. B.).

The Determination of Sex Theory, associated with the name of Professor Shenck, does not find much favor with savants. With the qualifying *ifs* and the usual loopholes of explanation in problems of the 50 cent. variety, not much can be expected. "Guess," said Sambo, "boy or girl?" "Boy?" "No, guess again." "Then a girl." "Yes, but who told you?" It is to be hoped that we are to have no more depopulating agencies, remote or otherwise.

The Hoff Memorial Fund.—Maj. John Van R. Hoff, surgeon U. S. A., now on duty at Vancouver Barracks, offered to establish a memorial fund for the late Alexander H. Hoff of the medical department of the army. The Secretary of the Treasury has accordingly been authorized to accept from Major Hoff the sum of $1,000 for interest at 4 per cent. The interest accruing from the fund is to be expended under the direction of the chief medical officer of the army for the purchase of a suitable gold medal each year, to be awarded to the graduate of the Army Medical School who maintains the best average standing in class. In case there is no session of the school in any year, a suitable medal is to be secured and presented to the medical officer of the army who during the year shall have performed the most distinguished medical research.

"In Good Health."—The United States circuit court of appeals says, in the case of the Manhattan Life Insurance Company vs. Carder, Nov. 10, 1897, that the term "in good health" is comparative. It does not mean in perfect health, nor would it depend upon ailments slight and not serious in their natural consequences. In construing this term in a life policy, the court goes on to say that it must regard the character of the risk assumed, and that looking at it from this point of view, it would seem that a person was in good health unless he was affected with a substantial attack of illness, threatening his life, or with a malady which had some bearing on the general health; not a slight illness or a temporary derangement of the functions of some organ.

The Bacillus of Whooping Cough.—Advices from Europe announce that Dr. Czapelewski, the celebrated bacteriologist of Cologne, has confirmed the discovery of bacillus of whooping cough recently made by Dr. Henry Koplik of New York. Dr. Koplik has been experimenting with particular relation to whooping cough for four or five years. A paper on the discovery of the bacillus was read before the British Medical Society in Montreal last summer. The bacillus is an exceedingly small and delicate one. In fact, with the exception of that of influenza, it is the smallest yet discovered. Its size is really about the same as that of influenza. Animal experiments have been tried, but it has been found impossible to reproduce the disease in animals.

Explanation of the Beneficial Effect of Venous Stagnation and inflammation in the struggle of the organism against the invasion of microbes.—Professor H. J. Hamburger announces that it is due to a hitherto unknown factor; the property possessed by CO_2 of causing the red and white corpuscles to swell up, and of liberating a diffusible alkali from the albuminates. It has already been established that serum taken from stagnated venous blood is much more bactericidal than normal blood, and that the lymph is also more bactericidal when stagnated. This he proves is due to the accumulation of CO_2. His tests showed that serum treated with CO_2 was far more bactericidal than normal serum, and that the richer in alkali the more pronounced the effect. Inflammation also causes stagnation, and hence the same effects; an accumulation of CO_2 in the parts involved and increased bactericidal power. He also asserts that the bactericidal properties are more pronounced the larger the number of white corpuscles present, which affords a new explanation of the *pus bonum et laudabile* of the older pathologists. The cells of the lymph glands also evince the same disposition to swell up and liberate alkali under the influence of CO_2.—*Deutsche Med. Woch.*, December 2.

What May be Assumed in Hypothetic Questions.—In the direct examination of an expert witness the facts assumed in a hypothetic question should be only such as are fairly within the scope or range of the testimony. Upon cross-examination, however, the supreme court of Illinois holds, in West Chicago Street Railway Company v. Fishman, November, 1897, any fact which, in the sound discretion of the court, is pertinent to the inquiry, whether testified to by anyone or not, may be assumed in a hypothetic question with the view of testing the skill, learning or accuracy of the expert, or to ascertain the reasonableness or expose the unreasonableness of his opinion. A question, though it goes beyond the scope of the evidence, may be propounded upon cross-examination if its office and purpose are to elicit the reason upon which the expert based an opinion expressed by him in his examination in chief, or to ascertain the extent of his learning and knowledge of the particular subject upon which he assumes to be an expert.

Violent Deaths Among the Employes of Railroads.—On the average about six thousand persons are killed on the railways of this country every year, and upward of thirty thousand injured. Hundreds of employes are killed and thousands injured every year while engaged in coupling or uncoupling freight cars. The law of 1893 demanded that the roads should equip their cars with automatic couplers and air brakes. After all these years much more than half the freight cars remain without even automatic couplers and fewer still are fitted with the brake. Request has been made by certain railroad magnates of the Interstate Commerce Commission, that the time within which the roads must comply with the law be extended for five years. This looks like asking permission to kill or maim a hundred thousand persons in order that derelict roads may wear out their old equipment without the expense of fitting it with the required safety appliances.—*New York Herald.*

Nutrose.—Nutrose is prepared from the casein of milk combined with sodium, and so converted into a soluble condition. It is a highly concentrated albuminoid food, and is represented to be free from the disadvantages of other "meat substitutes." Its advantages over meat derivatives are thus tersely summarized: 1, its high percentage (90 per cent.) of chemically pure albumin; 2, its almost complete lack of odor and taste; 3, its complete solubility in water, milk and other menstrua; 4, its miscibility with ordinary food stuffs; 5, its neutralizing power as against gastric hyperacidity; 6, its easy and almost complete absorbability by the digestive organs; 7, its lack of irritant effect upon the intestinal tract; 8, its practically sterile and undecomposable condition; 9, its inexpensiveness. As to the nutrient value of nutrose, the exact assimilation experiments of Salkowski, Marcuse, Stuve and Bornstein conclusively show that the absorption and utilization of this preparation is very complete and that the albumin of ordinary food may, when necessary, be wholly or partially replaced therewith without producing repugnance, gastro-intestinal irritation of putrefactive diarrhea.—*American Therapist.*

Liverpool Supplies the Antitoxin for Diphtheria free to the Poor.—A circular has been sent to the local practitioners from the medical officer of health of Liverpool intimating that a supply of antitoxin for the treatment of diphtheria has been provided by the Hospitals Committee at each of the five city hospitals, which can be obtained on application to the resident medical officer or matron at one or other of the said hospitals. The object which the hospitals committee has in view is primarily to supply antitoxin for use among the poorer class of patients;

and under any circumstances the committee will be obliged if a return showing the progress of the case be made upon a form which will be supplied at the respective hospitals. This is a step in the right direction and indicates the desire of the municipal authorities to afford every facility for the reduction of infectious diseases and for placing all classes of the community under the most favorable conditions toward recovery.

Prizes Offered by the Academie de Medecine of Paris.—Over $8,000 were distributed in the prizes of 1897, twenty-seven in all. Only seven were awarded entire to one person; the rest were divided among the two to five who came nearest to fulfilling the terms of the award. No communications were received in competition for the Monbinne prize of 1,500 francs (scientific mission). Two prizes were not awarded, the Audiffred and Pourat (tuberculosis and intra-vascular tension). The list of recipients includes only one foreigner Stadfeldt of Copenhagen, (ophthalmology). The prizes offered for 1898 are as follows, omitting three which are only open to French writers. Academie: Infectious myelitis from the clinic and experimental point of view, 1,000 francs, annual. Alvarenga: For best work on any branch of medicine, 800 francs, annual. Aubert: For clinic and experimental research on the question whether there are any human constitutions refractory to tuberculosis, 500 francs. Audiffred: For a sovereign curative or preventive remedy for tuberculosis, discovered in twenty-five years from 1896, title to an annuity of 24,000 francs. Baillarger: For the best work on the therapeutics of mental diseases, accompanied by a study of the organization of public and private asylums; 2,000 francs, biennial. Barbier: For a means of curing the diseases now considered incurable, cancer, epilepsy, scrofula, typhus, cholera morbus, etc. This prize can be distributed among those who come nearest to the aim proposed: 200 francs, annual. Bouillard: For the best work and the best curative results attained in mental affections; 1,200 francs, biennial. Bourceret: Circulation of the blood; 1,200 francs, annual. Buisson: For a cure for the diseases now considered incurable; 10,500 francs, triennial. Capuron: Experimental research in obstetrics; 1,400 francs annual. Chevillon: For best work on the treatment of cancerous affections; 1,500 francs, annual. Civrieux: Obsessions in mental pathology: 1,000 francs, annual. Clarens: Hygiene; 400 francs, annual. Daudet: Sarcoma; 1,000 francs, annual. Desportes: Practical medical therapeutics; 1,300 francs, annual. Falret: Somnambulists; 900 francs, biennial. Godard: Internal pathology; 100 francs, annual. Herpin: Abortive treatment of blennorrhagia; 1,200 francs, quadrennial. T. Herpin: Best work on epilepsy and nervous diseases; 3,000 francs, annual. Laborie: For the work that has advanced most notably the science of surgery; 5,000 francs, annual. Laennec: Infantile capillary bronchitis; 500 francs. Larrey: Medical statistics; 500 francs, annual. Louis: Serotherapeutics, 4,000 francs, triennial. Mège; Hay-fever, 900 francs, triennial. Meyrot: Diseases of the ear; 2,600 francs, annual. Monbinne: Scientific missions, medical, surgical or veterinary; 3,000 francs. Nativelle: Extraction of the active principle of some medicamentous substance, hitherto unisolated; 300 francs, annual. Nivet: Sanitation of barracks, hospitals, schools, crèches, asylums, etc.; 3,000 francs. Orfila: Cocculus indicus and picrotoxina, therapeutics and toxicology; 2,000 francs, biennial. Portal: Lesions of the nerve centers and kidneys caused by the toxins of tetanus and diphtheria; 600 francs, annual. Pourat: Circulation of blood in the lungs; 1,000 francs, annual. Saint Lager: For the production of the thyroid tumor in animals by administering substances taken from the waters or soil of localities where goiter is endemic; 1,500 francs. Saintour. For the best work on any branch of medicine; 4,400 francs, biennial. Stanski: Awarded to the person who has demonstrated the existence or non-existence of miasmatic contagion, by infection or contagion from a distance. If no communications are received conforming to these requirements, the prize will be awarded for the best elucidation of any question relating to contagion in the contagious, inoculable affections; 1,800 francs, biennial. Tremblay: For the best work on the affections of the urinary passages, catarrh of the bladder, prostatic lesions, etc.; 7,200 francs. quinquennial. Vernois: Hygiene; 700 francs, annual. The prizes offered for 1899, include, besides the unchanging annuals already mentioned—Academie: Physiology and pathology of the thyroid gland; 1,000 francs, annual. Amussat: For the best work of research, both anatomic and experimental, which has realized the most important progress in surgical therapeutics; 1,000 francs, triennial. Argenteuil: For the most important improvement in the curative treatment of strictures of the urethra, or for the best work on any affection of the urinary passages; 6,800 francs, sexennial. Civrieux: Nervousness; 800 francs, annual. Daudet: Lymphadenoma; 1,000 francs, annual. Lefèvre: Melancholia; 1,800 francs, triennial. Portal: Experimental study of the inoculation and contagion of cancer; 600 francs, annual. Pourat: Experimental research to elucidate the question of the immediate and remote destination of the albuminoid aliments; 700 francs, annual. Ricord: For the best work that has appeared in the two years on the venereal diseases; 600 francs, biennial. The prizes for 1900 include: Académie: Medication by organic juices; 1,000 francs, annual. Capuron: Hydromineral treatment of albuminuria; 1,000 francs, annual. Civrieux: Delirium in general paralysis; 800 francs, annual. Daudet: Results of surgical treatment of cancer of the ovaries; 1,000 francs, annual. Falret: Clinic forms of neurasthenia and their treatment; 700 francs, biennial. Itard: For the best book on practical medicine or applied therapeutics, published at least two years; 2,400 francs, triennial. Perron: For the author of the work that has best promoted the progress of medicine; 3,800 francs, quinquennial. Pourat: Intravascular sanguine tension; 700 francs, annual. Articles must all be received by the end of February, and be written in French or Latin, with the name in a sealed envelope unless in pamphlet or book form. The manuscripts, etc., are not returned to the authors.

Hospitals.

THE new Lakeside Hospital, Cleveland, Ohio, was dedicated January 12.——The Presbyterian Hospital, Chicago, receives $8,801 from a benefit concert given in the Auditorium January 17.

YALE MEDICAL SCHOOL is the recipient of $1,000, the gift of Mrs. D. C. Leavenworth of New Haven, Conn., as a memorial to the late Dr. D. C. Leavenworth, a graduate of the school in 1865.

Societies.

THE HARLEM MEDICAL ASSOCIATION held its annual dinner at the local Casino, January 15. Nearly sixty were present besides Surgeon-General Sternberg, who spoke highly of the AMERICAN MEDICAL ASSOCIATION and of the JOURNAL. He advocated a greater harmony among the profession at large, of which he was pleased to report many cheerful signs. Dr. Arthur M. Jacobus represented the Medical Society of the State of New York. He referred in response to the toast to many grivances of the profession which legislation might remedy, such as Health Board encroachments upon time-honored privileges and occasional assumptions of superior intelligence. He spoke at length upon the evils of unlicensed and ignorant midwifery. Dr. Joseph E. Janvrin, as President of the New York County Medical Association referred to the character of its work and the value of its contributions to the general stock of medical progress. Dr. Thomas H. Manley, in the course of his remarks upon the entertaining Association, humorously described his early experiences of the suburb and could not but be astounded at its growth. He also hoped that trivial differences might be adjusted in the profession and that harmony would be the rule. Being an optimist he could not be otherwise than cheerful. Owing to the absence of two advertised speakers, since reported as "unavoidably detained," Dr. John Shrady was forced to make an unprepared speech, which consumed several minutes. After this the meeting adjourned with cheers for Dr. Sternberg, who had sacrificed his convenience for this special occasion.

Washington.

REPORT OF THE HEALTH OFFICER.—The report of Health Officer Woodward for the week ended January 15 shows the total number of deaths to have been 96, of which number 57 were white and 39 colored. The principal causes of death: nervous disease 18, respiratory diseases 35, heart disease 6. There are at present 62 cases of diphtheria and 57 cases of scarlet fever under treatment.

COMMITTEE ON PUBLIC HEALTH.—The Committee on Public Health of the Washington Board of Trade, at its recent meeting decided to recommend to Congress the reclamation of the Anacostia Flats. The insanitary condition of these flats is largely responsible for the paludal fevers which prevail in Washington throughout the year and makes the city world-renowned for ill-health. The medical members of the committee are Surgeon-General George M. Sternberg, W. W. Johnston, G. L. Magruder, H. L. E. Johnson, L. W. Ritchie, W. P. C. Hazen, J. B. G. Custis, John E. Jones and George Henderson. Dr. S. C. Busey, who was chairman of the committee for several years, recently tendered his resignation.

MEDICAL AND SURGICAL SOCIETY.—At the meeting of the Society recently held Dr. Elmer Sotheron presented a specimen of ruptured tubal abscess with the history of the case. The subject was discussed by Drs. Joseph Taber Johnson and W. P. Carr. He also read a paper entitled "Hour-glass Contraction of the Uterus," which was discussed by Drs. Moran, Carr, Bowen, Morgan and J. T. Johnson. Dr. Stone read a paper entitled "The Mind Cure," which was discussed by Drs. Chamberlain, Capeheart, French, Kober and W. P. Carr.

MEDICAL SOCIETY.—At the meeting of the Medical Society on January 19 Dr. Stiles read a very instructive paper entitled "The Inspection of Meats for Animal Parasites," and Dr. Hasbrouck reported a case of hypertrophic pulmonary osteo-arthropathy with photographs and specimens.

Louisville.

LEGISLATION.—Public health is being looked after by the present legislature, as several bills have been introduced in the past week which are looking to that end. Bill No. 93, introduced by Mr. Desha of Harrison County, has as its object the keeping of itinerant dentists out of the State by requiring that dentists shall have a license from the Board of Examiners, appointed by the Kentucky State Dental Association. This bill was referred to the Committee on Public Health. Bill No. 113 was introduced by Mr. Chinn of Mercer County. It authorizes the appointment of a pure food commissioner, who shall see that all mixed and adulterated food and liquors, of every character and form, are labeled, showing the ingredients. It prohibits the manufacture of both pure and adulterated goods by the same person. The leading members say that the bill can never pass, as it conflicts with too many interests and would drive many grocers out of business. It will probably not get out of the Committee on Judiciary, to which it was referred. Bill No. 39, introduced in the Senate, is similar to the one just referred to, though not so comprehensive or far-reaching. This bill was introduced by Mr. Smith of Henry County. It requires that all handlers of mixed flour shall label or brand each package of flour with the ingredients contained therein. Bill No. 40, introduced by Senator Edmonson, requires factories to print on each label the year the fruit was put up and, where it is imported in bulk, the importer must stamp on each package the date of its arrival in the State. One bill has been reported favorably by the committee which raises the age of consent of females from 13 to 16 years, and the Committee on Public Health reported favorably on the bill to prevent the sale of meat of animals dying otherwise than by slaughter. It is believed both will pass.

ASYLUM APPOINTMENTS.—The Senate Committee on Charitable Institutions refused to confirm the appointment of the colored physician, Dr. B. F. Porter, who has been appointed by Governor Bradley as third assistant physician at Lakeland Asylum for the Insane. The Senate however refused to concur in the committee's recommendation and confirmed Dr. Porter's appointment, as it was shown that he would have charge of the colored inmates only. Dr. Louise Bergmann of Louisville, who has been serving as a resident physician at the Woman's Hospital at Philadelphia, has been notified by telegram to proceed at once to Lexington to assume her duties as third assistant physician to which position she has just been appointed by the Governor. This position was made vacant by the promotion of Dr. John L. Long, to be Superintendent of the Feeble Minded Institute, and the advancement of the assistants in consequence of his resignation as first assistant. There is some talk that the appointment of Dr. E. M. Wiley as Superintendent of the Lexington Insane Asylum, which was made during the interim of the legislature, would fail of confirmation because the Doctor is a "sound money democrat," and the legislature is largely "free silver." It is to be hoped that this will not be done as Dr. Wiley has made a most excellent superintendent.

PRISON.—The Sinking Fund Commissioners have decided to remove the male guards from the female wards of the Frankfort penitentiary, and to appoint in their place two women for that purpose.

MILK.—Health Officer Allen has introduced the policy of compelling all dairymen, whether residents of the city or county, or outside of the State, to take out a license as compelled by law, as it has been ascertained that the present law was sufficiently comprehensive to include out of town dealers who send milk to the city. It has already been the cause of an improvement in the character of milk supplied. In the Senate, Mr. Nazier of Shelby County, introduced Bill No. 45, relating to the sale of dairy products, and imitations thereof. It provides for the appointment of a milk inspector in every county, and for the stamping on all cans, boxes or packages the fact that any dairy product is adulterated.

Detroit.

AT A REGULAR MEETING of the Wayne County Medical Society December 23, Dr. Fritz Maass read a paper entitled "Toxin and Serum Treatment of Inoperable Tumors." After giving a history of the use and preparation of the serum as devised by Coley, the author presented statistics of cases treated by this method by Coley, Emmerich, Scholl and others, showing somewhat unsatisfactory results except in a small percentage of cases. The Doctor then gave a full history of a case of melanotic sarcoma occurring in his own practice treated by Coley's method. The treatment proved entirely unsuccessful. Not only that, but the Doctor considered that the treatment favored the development of metastases.

AT A MEETING of the Detroit Medical and Library Association January 10, Dr. C. W. Hitchcock read a paper entitled "Hemorrhagic Pancreatitis; a Case Having Unusual Medico-Legal Relations." The author described the disease as being one of insidious onset, but one which presents a very striking clinical picture, with its sudden, sharp and severe pain, the vomiting, collapse and evidence of profound shock. Its course has been as short as one-half hour (that is, after first known symptoms) and as long as several days. The etiology is obscure. Alcoholic excesses, previous attacks of gastroduodenitis and possibly injury are thought to be factors. Antemortem diagnosis is infrequent, though a few cases are reported. The diagnosis frequently falls on intestinal perforation, appendicitis, irritant poison or acute intestinal obstruction. Medico-legal phases are rare. Poison was suspected in one case. References to injury as a cause are few and not satisfactory. Fitz reports a case in which injury is assigned as probable cause. In the case here reported the patient told none of his physicians of any injury and denied it to one, but after his death a fellow employe alleged a fall and claim was made for insurance, the patient having held an accident policy. Autopsy established clearly the existence of hemorrhagic pancreatitis with all the usual pathologic evidences. Yet in the face of all this at least two physicians leaned to the theory of death from hemorrhage from rupture, although no such rupture could be found. The man died fifty-four hours after the first symptoms, presenting the typic clinical picture of hemorrhagic pancreatitis. Though the history of injury was doubtful and all the clinical

evidence was against its being the cause of death, yet, owing to its allegation by the only eye-witness, the differing opinion of physicians and the additional doubt as to whether or not injury might stand in a causal relation to hemorrhagic pancreatitis, a compromise of the case was advised and secured.

HARPER HOSPITAL MEDICAL BOARD.—At a meeting of the Board of Trustees of Harper Hospital held on Tuesday evening, January 11, the following staff was elected for the year 1898: J. H. Carstens, M.D., chief of staff; consulting surgeons, Theo. A. McGraw, E. T. Tappey; attending surgeons, Daniel Laferte, H. O. Walker, J. K. Gailey; junior attending surgeons, Angus McLean, P. M. Hickey, Benjamin P. Brodie, F. B. Tibbals; consulting physicians, Charles Douglass, J. J. Mulheron; attending physicians, George Duffield, W. R. Chittick, C. G. Jennings, F. W. Mann; Junior attending physicians, F. W. Robbins, B. R. Shurly; consulting oculists, L. Connor, George E. Frothingham; attending oculists, George E. Frothingham, Jr., Don M. Campbell; consulting neurologist, David Inglis; attending neurologists, J. E. Emerson, C. W. Hitchcock; dermatologist, A. E. Carrier; laryngologist, E. L. Shurly; consulting gynecologist, Helen F. Warner; attending gynecologists, H. W. Longyear, W. P. Manton, Harriet A. Gerry, J. H. Carstens; microscopist, E. H. Sargent; assistant microscopist, Thaddeus Walker; pathologist and curator, E. H. Troy.

Denver.

BUREAU OF HEALTH.—The water-supply of the city has occupied the attention of Health Commissioner Dr. Wm. P. Mun for the last three years. The lingering cases of sporadic typhoid fever stand out in bold relief when examined in the light of the general low mortality, 10.48 per 1,000 per annum, and according to the investigation of the department, the water supply is one, if not the sole, source of the infection. The annual reports for 1895 and 1896 contain graphic descriptions of the contaminated sources whence the water is supplied and attempts made by the commissioner to induce the Denver Union Water Company to act on the recommendations made by the bureau. But the company turned a deaf ear and went on disseminating filth and disease. Happily for the city the mayor, the members of the city council and the citizens of Denver are in sympathy with their energetic and fearless health commissioner. Suit was begun by the city against the company and the stockholders begin to see that the long suffering public is alive to the interests and mean business. The company made haste to introduce some of the suggestions made by the health department in order to blind the public, but the commissioner kept his eyes open and induced the members of the council to go in a body and see everything there is to be seen. The company has requested the privilege of sending their engineer and secretary along with the expedition, which request was granted. After a thorough inspection of the sources of the water supply, their filthy surroundings and inadequate filtration, there remained no more doubt in the minds of the city fathers, and to a certain extent in the minds of the officials of the company as to the correctness of the statement of the last annual report, which reads: 1. That the Mississippi Street horizontal wells and the Harrimon Ditch were subject to sewage pollution of the most serious nature. 2. That the mixed water supplied to the city furnished evidence of that pollution in the presence of bacteria to the number of as high as 5,000 c.c. during the summer. 3. That decreased use of the water was coincident with decreased bacterial contamination of the mixed supply. 4. That the typhoid fever prevalence followed the period of maximum use of the polluted water and the diminished use of polluted water seems so far to have been followed by diminished typhoid prevalence.

THE ANNUAL MEETING OF THE DENVER AND ARAPAHOE MEDICAL SOCIETY was held December 11. The event of the evening was a paper read by Dr. Sewall on the "Reduplication of the Heart Sounds and Its Clinical Signification." When he announced that the reduplication of the second sound is a perfectly normal phenomenon, and can be discerned in every man, sound or sick, the members manifested a great deal of surprise. Dr. Sewall spoke of the causes of heart sounds and the elements which produce them. Each side has three elements and therefore six separate sounds could be heard. The reduplications are: Prolongation, splitting and doubling. The reduplication may be real or simulated. The reduplication of the second sound is heard plainest at the base of the heart, and is most marked at the end of respiration. The explanation of the cause of the normal phenomenon of the reproduction is a very ingenious one. It depends upon the non-synchronous closure of the sigmoid due to unequal arterial pressure, and as the difference in pressure is greatest at the end of inspiration the reduplication is in consequence most marked at that time. The lessening of reduplication of the second sound, the author avers, is rather a pathologic symptom. Dr. J. N. Hall, in discussing the paper, called attention to the fact that in mitral stenosis the reduplication of the second sound is pathognomonic, notwithstanding Strümpell and others to the contrary. Dr. H. B. Whitney said: "If any one would have told me a week ago that the second sound is as a rule reduplicated, and that I have been during these long years of practice like the wicked 'who hath ears and heareth not,' I would have scorned such an assumption. But thanks to Dr. Sewall, who has given me the opportunity to examine twenty patients under his tutelage, I can say that the reduplication of the second sound was a perfect revelation to me." He has heard the reduplication in fifteen cases out of the twenty. It requires, however, a highly trained ear. The election of officers resulted as follows: E. P. Hershey, president; H. B. Whitney, vice-president; J. M. Blaine, financial secretary; J. E. Rothwell, treasurer, and George Tyler, secretary. From the exhaustive report of the retiring secretary, Dr. Spivak, we glean that fourteen meetings were held during 1897; the average attendance was thirty-six; twenty-seven papers were read and eleven cases reported. The Society has 150 members. The secretary suggested that a historic sketch of the Society, which is now in its twenty-seventh year of its existence, as well as the annual Transactions, be published. The suggestions were referred to the incoming Board of Censors, which is composed of Drs. Fleming, Eskridge, Hopkins, McLauthin and Van Zant.

THE DENVER CLINICAL SOCIETY.—Notwithstanding the fact that our sister-practitioners avail themselves of all the privileges which the existing medical societies afford, and not only do they grace the meetings with their presence, but also take active part in presenting and discussing papers in a manner by no means less dignified and scholarly than their brother practitioners, yet they have an organization of their own called by the above name. At the suggestion of Dr. Mary B. Bates, the women physicians have organized the society, which is in its third year of existence, and has for its object "the mutual improvement arising from informal discussion of interesting cases and new methods of treatment, as well as to foster greater sociability, closer acquaintance and sympathy among the members." The Society has twenty members and meetings are held bi-monthly. The present officers are: M. Jean Gale, president; Una Roberts, first vice-president; Catherine Hayden, second vice-president, and Josephine L. Peavey, secretary and treasurer. At the last meeting, held January 4, Dr. Lavney read a paper on "Uremia," with reports of a case of uremic convulsions, which necessitated emptying of the uterus. The patient recovered. The paper was discussed by Drs. Gale, Yont and Roberts.

Philadelphia.

EPIDEMIC OF TYPHOID FEVER.—The city authorities have recently had the most convincing kind of an object lesson afforded them regarding the direct relation of cause and effect existing between a sewage-polluted water-supply and the prevalence of typhoid fever in a thickly settled community. Some years ago their attention having been directed to the greater proportionate number of deaths from this disease in Philadelphia than in other large cities, and the cause being indicated and recognized as sewage pollution of the water-supply, provision was made to prevent such contamination by the construction of a large intercepting sewer, which runs nearly parallel with the Schuylkill River and empties its contents below the city

water works. Since its completion there has been observed a decided diminution in the number of cases of typhoid fever until recently. On November 16 last some workmen in flushing this great sewer turned on too great a head of water and the sewage backed up and before it was stopped overflowed for a few hours only into the Schuylkill. The polluted water was pumped principally into the Queen Lane Reservoir, supplying eight wards, which are considered as being among the healthiest wards of the city under ordinary circumstances. The first results were shown in the sudden increase of typhoid in these wards. Later there was a decided rise in the number of cases in other portions of the city. The reports of the health office as published weekly show that for the week ending November 22 there were only 34 cases, November 29, 54; December 6, 117; December 13, 125; December 20, 110; December 27, 107; January 3, 97; January 10, 165; January 17, 201; January 24, 212. The health authorities of the city have done their duty promptly. Dr. Abbott, head of the bacteriologic department, has prepared a report containing a striking array of figures and water analyses, accompanied by a chart or diagram of the affected districts. The County Medical Society has adopted resolutions condemning the water-supply and calling for the construction of a filtering plant as the only remedy. The suggestion was made by a member of Councils to ask the assistance of the United States Marine-Hospital Service, which, however, met with little favor. In view of the fact that by a popular vote on a new loan bill, Councils were authorized to spend more than a million of dollars in the specific purpose of improvement of the water supply, it would seem that the situation has been well summed up by the mayor of the city, Mr. Warwick, who said in an interview: "There is only one thing that can be done now and that is to pass the loan bill. The betterment of the water-supply is the crying need of the people and this administration will attend to it just as soon as the money is available to accomplish the purpose." Dr. Benjamin Lee, Secretary of the State Board of Health, improves the occasion to point out the fact that for the last ten years the board has been endeavoring to secure the passage of a law to protect the Schuylkill as well as other rivers in Pennsylvania which supply cities with water from being the repositories of drainage, but without success. He ascribes the present outbreak directly to the pumping of polluted water into the Queen Lane Reservoir, and believes that it could have been averted by a proper system of filtration, such as had been advised by the City and State Boards of Health years ago. There can be no question but that the present outbreak has occurred at a most opportune time to strengthen the arguments of our health authorities and to enlist public opinion in favor of a much needed public improvement which Councils will probably be compelled to carry out.

PHYSICIANS' BENEFIT ORGANIZATION.—The Mutual Aid Association of the Philadelphia County Medical Association was the subject of the meeting of the County Society January 26. Addresses were made by Dr. Edward Jackson, president of the Society; Dr. Chas. Herman Thomas, president of the Mutual Aid Association, and John B. Roberts, ex-president. Dr. A. F. Currier of New York read a communication entitled "The Fifty-five Years of the New York Society for the Relief of Widows and Orphans of Medical Men." Dr. Chas. H. Leale, president of the New York Society, was also present and addressed the meeting. The Rev. Dr. Krauskopf, by invitation, spoke on "The Necessities of the Widow and Orphan," and the Rev. Chas. Wood spoke on the subject of "Charity." The meeting was largely attended and a number of visitors interested in philanthropic work were present. A reception and collation at the University Club followed the exercises, Dr. M. O'Hara was chairman of the committee having the entertainment in charge.

THE ANNUAL MEETING of the Faculty of the Philadelphia Polyclinic and College for Graduates in Medicine, was held January 17. The report of the Secretary showed that the number of pupil-physicians in attendance was larger than ever before in the history of the College. The most popular ticket was that for the general course. Of the special tickets taken, those in ophthalmology exceeded those of any other branch. The report of the Treasurer was equally satisfactory. In addition to the payment of all fixed charges of maintenance, the Faculty had contributed $1,800 to the sinking fund. This fund was established for the purpose of gradually wiping out the mortgages on the buildings, freeing the institution from debt and putting it on a sound financial basis that shall be independent of the number of students and of other circumstances. The officers that have served for 1897 were re-elected: Howard F. Hansell, president; Lewis Steinbach, vice-president; Max Stern, Secretary.

AT THE JANUARY MEETING of the Ophthalmic Section of the College of Physicians, held on the 19th inst., after transaction of the scientific business, the election of officers for 1898 resulted in the choice of Geo. C. Harlan for chairman and Howard F. Hansell for clerk of the Section for the ensuing year.

CHANGE OF ADDRESS.

Bausch & Lomb, from Masonic Temple to Stewart Building, Chicago.
Chancellor, C. G., from 613 Pine to Oriel Building, St. Louis, Mo.; Cunningham, S., from Taylor to Dallas, Texas; Cresswell, G. W., from 8 De Kalb St. to 36 Spruce St., Chicago, Ill.
Drake, G. W., from Nashville, Tenn. to Hollins, Va.
Houghton, E. F., from Rochester to Tilton, N. H.; Hawley, E. A., from 477 E. 45th to 663 Congress St., Chicago, Ill.
McLaughlin, from Austin to "Tower House" Galveston, Texas; McBride, M. A., from Yorktown to Sidney, Texas; Marcussen, W. B., from Harrison and Center Ave to 571 W. Madison St., Chicago, Ill.
Trumbower, M. R., from Denver, Colo. to Monett, Mo.
Uhler, J. R., from 661 W. Fayette St. to 1531 McCulloch, Baltimore, Md.
Whiting, E. D., from Chicago, Ill. to Alma Sanitarium, Alma, Mich.

LETTERS RECEIVED.

Ashby, W. W., (2) Ouray, Colo.; Arnold, Philip, (2) Elizabeth, Ill.; Anderson, Winslow, San Francisco, Cal.; Applegate, J. C., Bridgeton, N. J.; Asepta Chemical Co., New York, N. Y.; Atkinson, W. B., Philadelphia, Pa.
Bovinine Co., The, New York, N.Y.; Brown, F. F., Advertising Agency, New York, N. Y.; Busey, S. C., Washington, D. C.; Bleazby, L. F., Detroit, Mich.; Barringer, G. R., Yorktown, Ill.; Black, H. C., Waco, Texas; Brown, J. M., New York, N. Y.
Chas. Roome Parmele Co., New York, N. Y.; Class, W. J., Chicago, Ill; Cokenower, J. W., Des Moines, Iowa; Cronica Medica Mexicana, Mexico City, Mexico; Cutter, F. H., Cedar Falls, Iowa; Case, I. S., Columbus, Ohio; Colorado Sanitarium, Boulder, Colo.; Canton Surgical and Dental Chair Co., Canton, Ohio.
Dial, W. H., Laurens, S. C.; Dunlap, J. L., Columbus, Ohio.
Elliott, H. G., New York, N. Y.; Edson, Carroll E., Denver, Colo.; Ewing, W. G., Nashville, Tenn.
Frissell, Seraph, Springfield, Mass.; Fougera, E. & Co., New York, N. Y.; Fulton, John S., Baltimore, Md.; Fisk, George V., Burlington, Vt.
Golden, I. J. K., Chicago, Ill.; Gibb, Joseph S., (2) Philadelphia, Pa.; Gaston, J. McFadden, Atlanta, Ga.; Goss, F. W., Roxbury, Mass.; Greene, J. H., Dubuque, Iowa.
Hummel, A. L., Advertising Agency, New York, N. Y.; Hall, C. Lester, Kansas City, Mo.; Hektoen, L., Chicago, Ill.; Harris, M. L., Chicago, Ill.; Hannah, R. B., Felicity, Ohio; Herrick, A. B., Lisbon, N. D.; Haldenstein, I., New York, N. Y.; Howle, W. P., Oran, Mo.; Hogan, G. A., Birmingham, Ala. Hay, E. C., Hot Springs, Ark.
Jones, C. D., Malden, Mass.; Jackman, W. S., Chicago, Ill.
King, F. R., Anita, Iowa; Kimball, A. D., National Military Home, Ind.; Kiernan, Jas. G., Chicago, Ill.; King-Jones Co., Limited The, Toronto, Canada.
Marks, A. A., New York, N. Y.; McDill, J. R., Milwaukee, Wis.; Milliken, John T. & Co., St. Louis, Mo.; Mitchell, Henry, Trenton, N. J.; Mitchell, Alfred, Brunswick, Me.; MacCoy, George T., Columbus, Ind.; Martin, Thos. Chas., Cleveland, Ohio; Middleton, W. D., Davenport, Iowa; Malt Diastase Co., New York, N. Y.
Newberry Library, The, (2) Chicago, Ill.
Oakland Chemical Co., New York, N. Y.
Pratt, W. E., Buckingham, Va.; Pleak, S. Marton, Breese, Ill.; Perdue, W. R., Unionville, Pa.; Potter, H. N., Burlington, Vt.; Paul Paquin Laboratories, St. Louis, Mo.; Patch, Wm., (2) Sibley, Ill.
Reasoner, R. W., Morrisonville, Ill.; Rutledge, S. W., Grand Forks, N. D.; Rawlins, C. M., Cleveland, Ohio; Rockwell, A. D., New York, N. Y.; Rogers, H. S., Red Oak Iowa.
Shoemaker, J. V., Philadelphia, Pa.; Savage, G. C., Nashville, Tenn.; Strong, T. D., Westfield, N. Y.; Scott & Browne, New York, N. Y.; Scheppegrell, W., New Orleans, La.; Stuart, J. C., Minneapolis, Minn.; Sweetser, H. B., Minneapolis, Minn.; Shotwell, A. N., Mt. Clemens, Mich.
Tedrow, J. B., Williams, Iowa; Treat, E. B. & Co., New York, N. Y.
United States and Canada Mercantile Agency, (2) Chicago, Ill.; Union Publicity Co., Brooklyn, N. Y.
Welch, Wm. H., Baltimore, Md.; Welch Grape-Juice Co., The, Watkins, N. Y.; Woodworth, R. G., Pueblo, Colo.; Wingate, U. O. B., Milwaukee, Wis.; Western Pennsylvania Medical College, (2) Pittsburg.
Zimmermann, A., Step, Ala.

THE PUBLIC SERVICES.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from January 8 to 14, 1898.

Capt. Charles F. Mason, Asst. Surgeon (U. S. Military Academy, West Point, N. Y.), is granted leave of absence for two months, with permission to go beyond sea, to take effect April 1, 1898.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending January 22, 1898.

Surgeon A. G. Cabell, ordered home and granted three months' sick leave.

P. A. Surgeon A. W. Dunbar, order of January 12 modified; detached from the "Nashville" and ordered to the "San Francisco," by steamer of January 22.